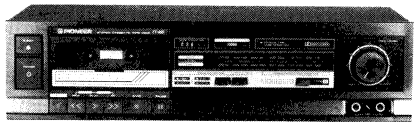
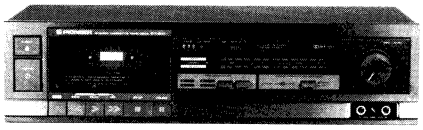
PIONEER

W2 3

Service Manual



• CT-660 [BK]



• CT-S11 [BK]

REPAIR & ADJUSTMENTS

ORDER NO.
ARP-796-0

STEREO CASSETTE TAPE DECK

CT-660(BK), CT-660
CT-S11(BK), CT-S11

(KU type only) (KU type only)

- CT-S11 is the same as the CT-660 except for the exterior design .
- Both models CT-660 and CT-S11 come in two colors, black and silver.
- As to the circuit descriptions, please refer to the CT-960 service manual (ARP-788-0).
- Models CT-660 (BK: black) and CT-660 (silver) come in versions distinghished as follows:

Type	Applicable model		Power requirement	Destination
	CT-660 (BK)	CT-660		
KU	○	○	AC120V only	U.S.A.
KC	○	–	AC120V only	Canada
D	○	○	AC120V/220V/240V (switchable)	General market
HEM	○	○	AC220V (240V)*	European continent
HB	○	○	AC240V (220V)*	United Kingdom
HP	–	○	AC240V (220V)*	Australia

*Change the primary wiring of the power transformer.

- This service manual is applicable to the KU, HEM, HB and D types.
- As to the HEM, HB and D types, please refer to pages 40 – 43.
- As to the HP type, please refer to the additional service manual (ARP-797-0).
- As to the KC type, please refer to additional service manual (ARP-798-0).
- Ce manual d'instruction se fefère au mode de réglage, en français.
- Este manual de servicio trata del métado adjuste escrito en español.

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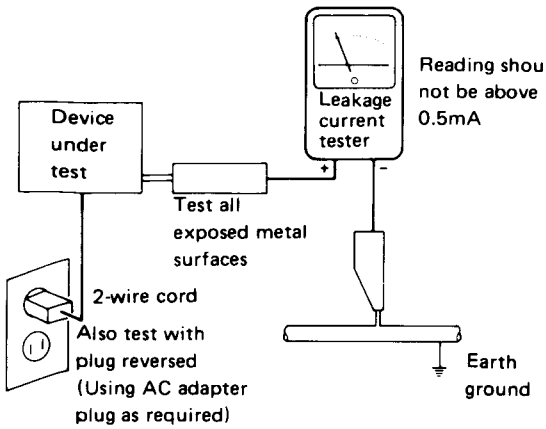
SAFETY INFORMATION

1. SAFETY PRECAUTIONS

The following check should be performed for the continued protection of the customer and service technician.

LEAKAGE CURRENT CHECK

Measure leakage current to a known earth ground (water pipe, conduit, etc.) by connecting a leakage current tester such as Simpson Model 229-2 or equivalent between the earth ground and all exposed metal parts of the appliance (input/output terminals, screwheads, metal overlays, control shaft, etc.). Plug the AC line cord of the appliance directly into a 120V AC 60Hz outlet and turn the AC power switch on. Any current measured must not exceed 0.5mA.



AC Leakage Test

ANY MEASUREMENTS NOT WITHIN THE LIMITS OUTLINED ABOVE ARE INDICATIVE OF A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

2. PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in the appliance have special safety related characteristics. These are often not evident from visual inspection nor the protection afforded by them necessarily can be obtained by using replacement components rated for voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this Service Manual.

Electrical components having such features are identified by marking with a ⚠ on the schematics and on the parts list in this Service Manual.

The use of a substitute replacement component which dose not have the same safety characteristics as the PIONEER recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, or other hazards.

Product Safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the current PIONEER Service Manual. A subscription to, or additional copies of, PIONEER Service Manual may be obtained at a nominal charge from PIONEER.

QUESTIONNAIRE MODEL _____

One Model per questionnaire

Dear Servicer,

Thank you for your cooperation in the post-sale service of Pioneer products.

This questionnaire is used as a tool to improve the serviceability of our products and service manuals. Please evaluate this model and service manual by answering the following questions. Your ideas may be realized in our future products. Your answers will be appreciated. Thank you.

PIONEER ELECTRONIC CORP.

T. Nakagawa, Manager, Service Section, International Division

1. SERVICING EVALUATION	Circle applicable number:	Good		Fair		Poor
a. Disassembly/Re-assembly:		1	2	3	*4	*5
b. Circuit Checks:		1	2	3	*4	*5
c. Replacement of Parts:		1	2	3	*4	*5
d. Adjustment (s):		1	2	3	*4	*5

* If (4) or (5) was circled, please be specific.

e. Your advice, opinion or ideas related to servicing this product.

2. SERVICE MANUAL EVALUATION

a. Circuit & Mechanism Description

b. Circuit Diagram

3. OTHER

Please describe other areas of servicing which you may find difficult.

Completed by : Date :

Company Name :

Address :

City/State/Zip :

Please send this form filled to the distributor in your country.

1. SPECIFICATIONS

System . . . . . 4-track, 2-channel stereo
Heads . . . . . "Hard Permalloy" recording/playback head x 1
"Ferrite" erasing head x 1
Motor . . . . . DC servo motor x 1
Wow and Flutter . . . . . No more than 0.07% (WRMS)
No more than ±0.19% (DIN)
Fast Winding Time . . . . Approximately 90 seconds (C-60 tape)
Frequency Response
–20dB recording:
Normal tape . . . . . 30 to 14 000Hz
Chrome tape . . . . . 30 to 15 000Hz
Metal tape . . . . . 30 to 15 000Hz
Signal-to-Noise Ratio
Dolby NR OFF . . . . . More than 57dB
Noise Reduction Effect
Dolby B-type NR ON . . . . . More than 10dB (at 5kHz)
Harmonic Distortion . . . . . No more than 1.5% (0dB)
Input
(Sensitivity)
MIC (L, R) . . . . . 0.3mV, 6mm diam. jack
(Source impedance 600Ω)
LINE (INPUT) 50mV
(Input impedance 68kΩ)
Output (Reference level)
LINE (OUTPUT) 316mV
(Output load impedance 4kΩ)

Furnished Parts

Operating instructions 1
Connection cord with pin plugs 2

Subfunctions

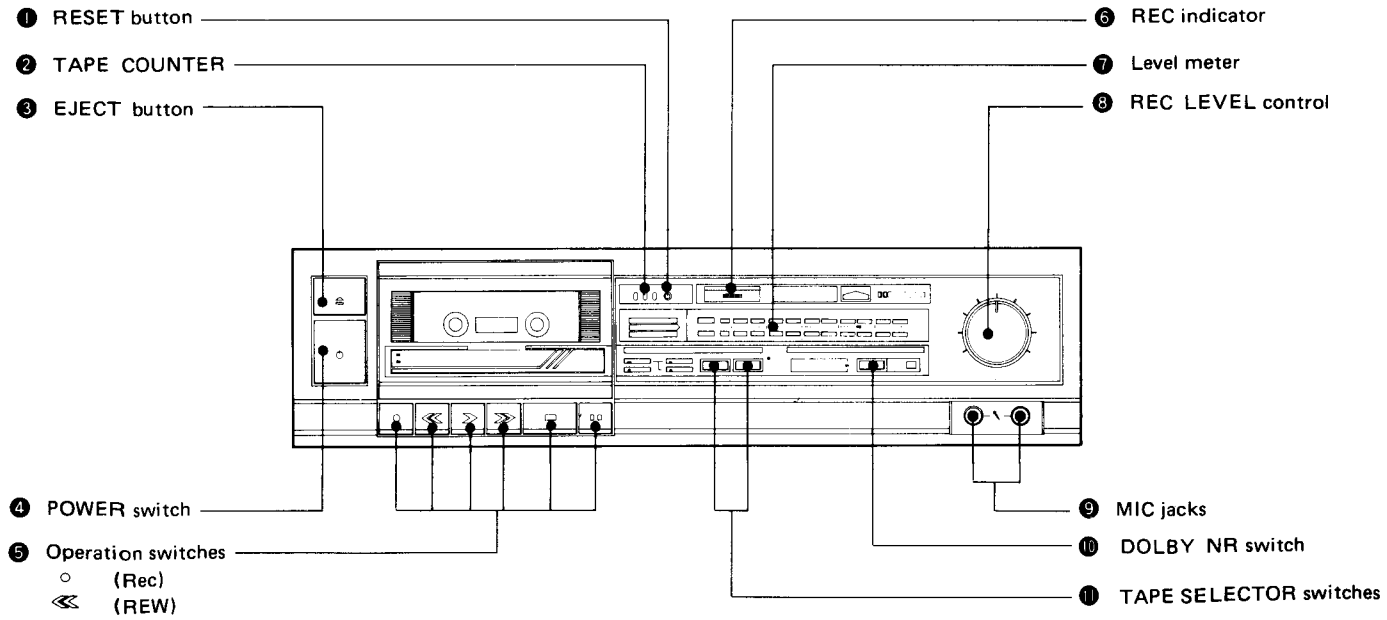
- Cue and Review function
- Dolby NR system (B type)
- 3 position tape selector (NORM/CrO_2/METAL)
- Oil damped eject function
- Full automatic stop function
- Timer stand-by function
- LED level meter
- One-touch recording

Miscellaneous

Power requirements
KU, KC models AC120V, 60Hz
HEM model AC220V, 50/60Hz
HB, HP models AC240V, 50/60Hz
D, D/G models . . . AC120V/220V/240V, 50/60Hz (switchable)
Power Consumption
KU, KC models . . . . . 10 watts
HEM, HB, HP models . . . . . 10 watts
D, D/Gmodels . . . . . 8 watts
Dimensions . . . . . 420 (W) x 109 (H) x 222 (D) mm
16-9/16 (W) x 4-5/16 (H) x 8-12/16 (D) in
Weight (without package) . . . . . 3.2kg (7 lb 1 oz)

NOTE:
Specifications and the design subject to possible modifications without notice due to improvements.

2. FRONT PANEL FACILITIES

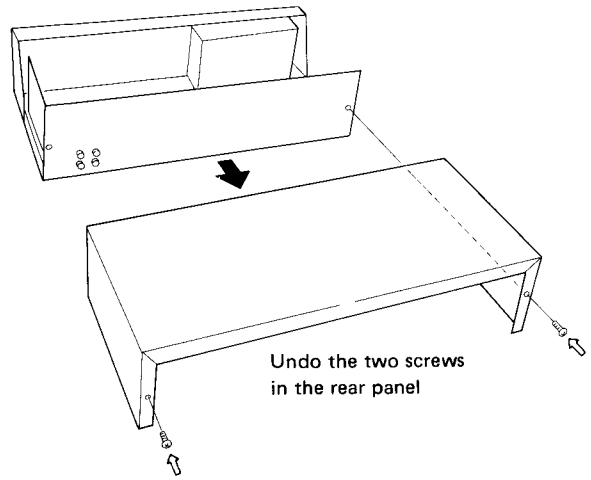


NOTE:
The unit's POWER switch is geared to selecting the transformer's secondary and so even at the STAND-BY position, the unit's circuitry will work as long as the power cord is connected to power outlet. Disconnect the power cord from the power outlet when you do not plan to use the unit for a long period of time.

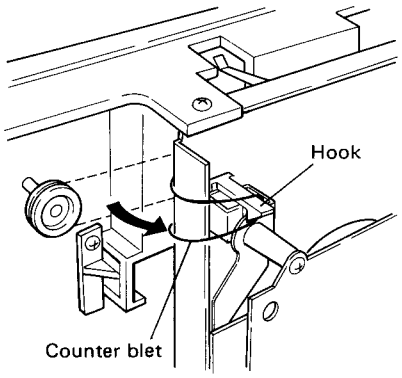
3. DISASSEMBLY

Disassembly of Tape Transport Unit

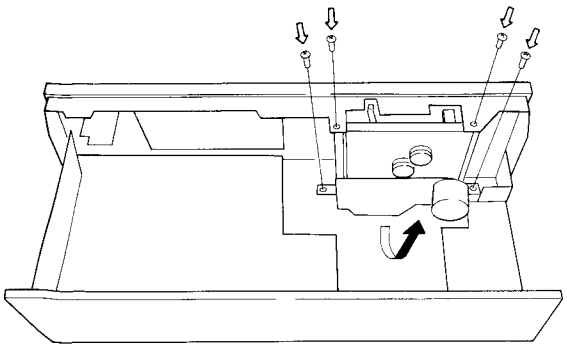
1. Remove the bonnet.



2. Temporarily pass the counter belt around a chassis hook.

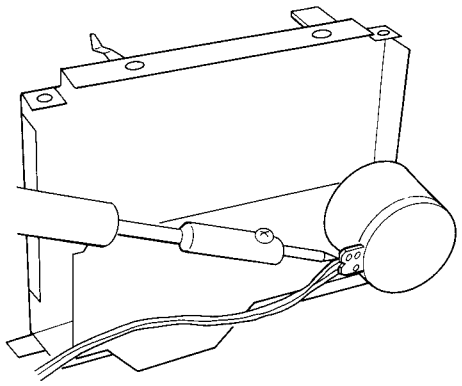


3. Open the cassette door.
4. Undo the four screws securing the tape transport unit, pull the unit out towards the rear.

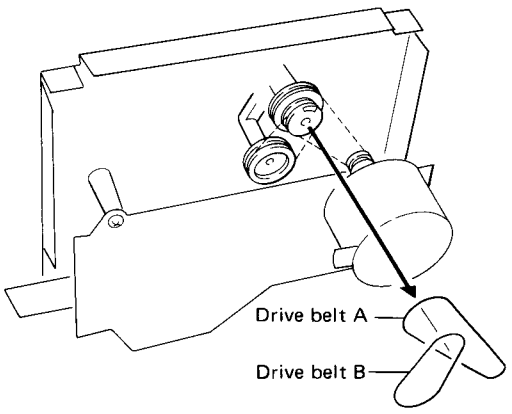


Motor Replacement

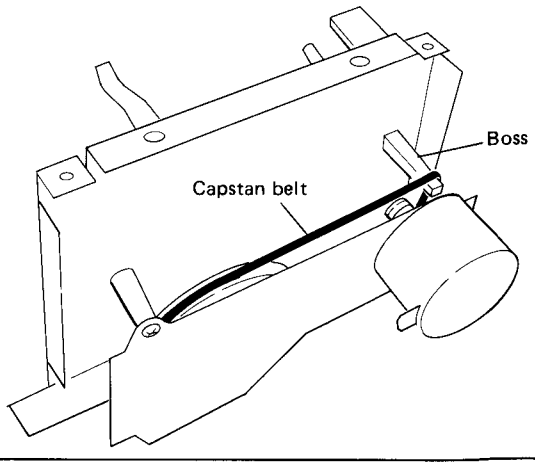
1. Remove the tape transport unit from the deck.
2. Disconnect the motor lead wires from the motor.



3. Remove the drive belt B and then remove the drive belt A.

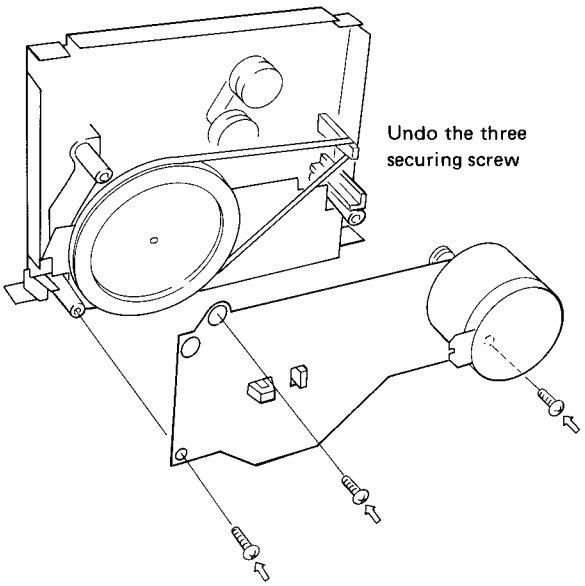


4. Temporarily pass the capstan belt around a chassis boss.

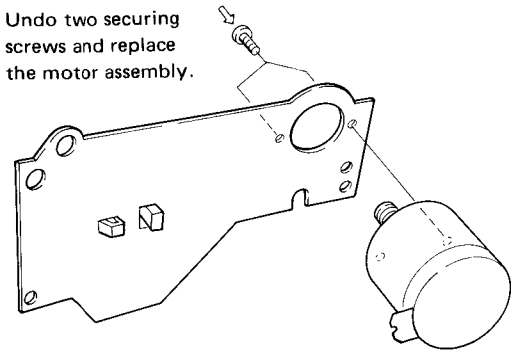


Capstan Belt Replacement

5. Remove the flywheel holder plate.



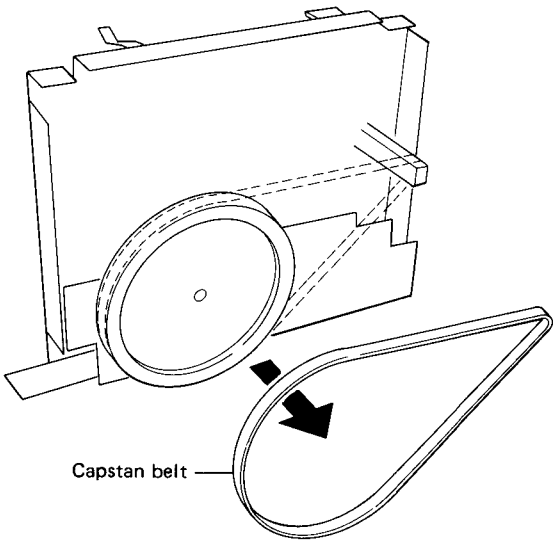
6. Replace the motor assembly



7. Pass the belt around the pulley, and re-assemble in the reverse order.

8. Adjust tape speed according to the "Tape Speed Adjustment" procedure.

1. Remove the tape transport unit from the deck.
2. Remove the drive belt B and then remove the drive belt A.
3. Temporarily pass the capstan belt around a chassis boss.
4. Remove the flywheel holder plate.
5. Replace the capstan belt.

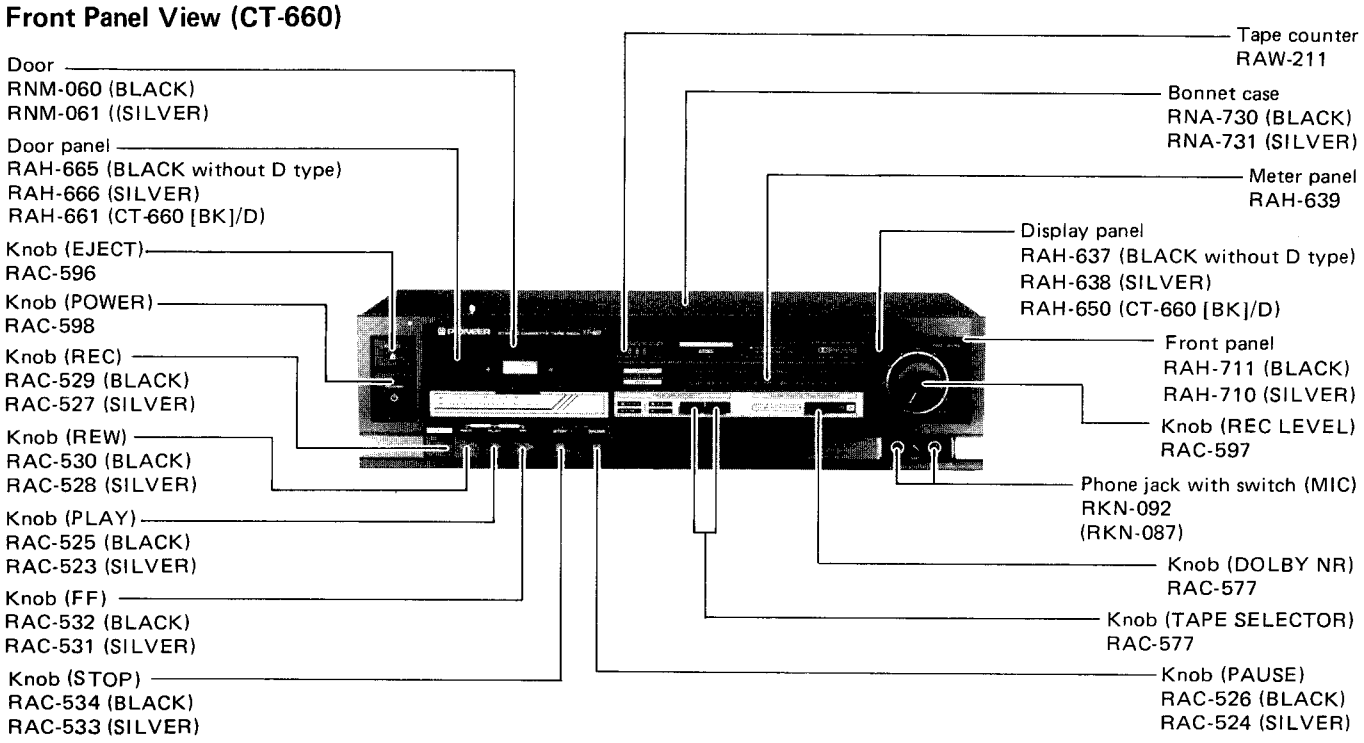


6. Reassembly in the reverse order.

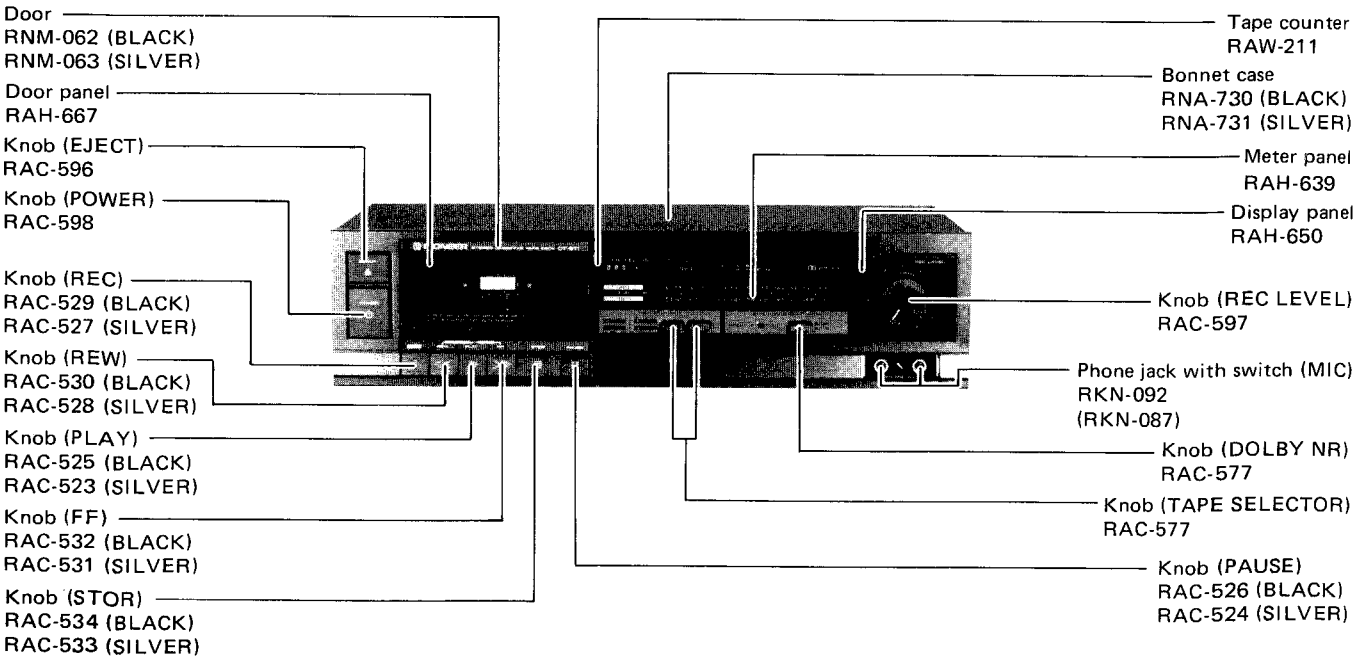
4. PARTS LOCATION

- *Parts without part number cannot be supplied.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.*
  ★★ GENERALLY MOVES FASTER THAN ★.
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.

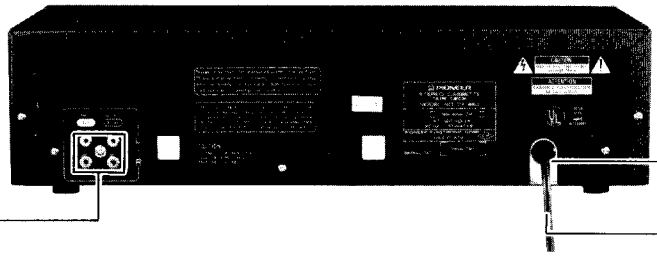
Front Panel View (CT-660)



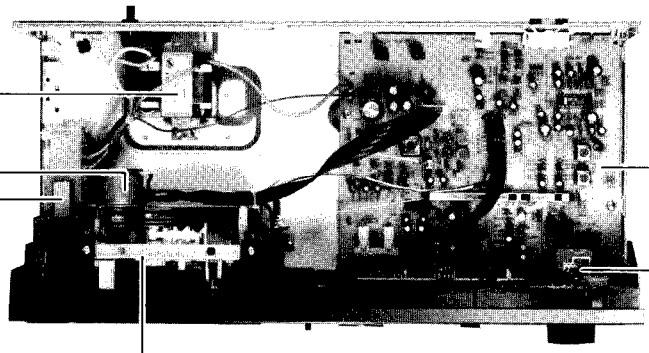
Front Panel View (CT-S11)



Rear Panel View



Top View



5. ELECTRICAL PARTS LIST

NOTES:

- *When ordering resistors, first convert resistance values into code form as shown in the following examples.*
  Ex. 1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J = 5%, and K = 10%).

560Ω	*56 x 10¹*	*561*	*RD¼PS* 5 6 1 *J*
47kΩ	*47 x 10³*	*473*	*RD¼PS* 4 7 3 *J*
0.5Ω	*0R5*		*RN2H* 0 R 5 *K*
1Ω	*010*		*RS1P* 0 1 0 *K*

  Ex. 2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62kΩ	*562 x 10¹*	*5621*	*RN¼SR* 5 6 2 1 *F*

- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.*
  ★★ GENERALLY MOVES FASTER THAN ★.
  This classification shall be adjusted by each distributor because it depends on model number , temperature, humidity, etc.

Miscellaneous Parts

P.C. BOARD UNITS

Mark	Symbol & Description	Part No.
	Main unit	non supply
	Indicator unit	
	VR unit	
	Power switch unit	

OTHERS

Mark	Symbol & Description	Part No.
⚠ ★	T1 Power transformer (120V)	RTT-437
⚠	AC Power cord	RDG-048
⚠	Strain relief (for AC power cord)	REC-395
	Tape counter	RAW-211
★★	Motor	RXM-130
★★	REC/PB head	RPB-122
★	Erase head	RPB-085
★★	S1 Lever switch (Play)	RSN-034
★★	S2 Spring switch (FF)	RSN-035

Main Unit

SEMICONDUCTOR

Mark	Symbol & Description	Part No.
★★	Q301	HA12045
★★	Q302	M5218L
★★	Q101, Q102, Q201, Q202	2SC2240
★★	Q103 – Q107, Q203 – Q207	2SC1740S
★★	Q306, Q307	2SC1815
⚠ ★★	Q303, Q304	2SD1406
★★	Q305	2SA933S
⚠ ★	D301 – D304	1SR35-100A
★	D305, D309	1S2473
⚠ ★	D306, D307	RD13EB1 (RD13EB2) (MTZ13A) (MTZ13B)
★	D308	RD5.1EB2 (MTZ5.1B)

SWITCHES

Mark	Symbol & Description		Part No.
★★	S301	Slide switch	RSH-078
★★	S302, S303	Push switch assembly	RSG-174
★★	S304	Push switch	RSG-175

COILS AND FILTERS

Mark	Symbol & Description		Part No.
	L301	OSC coil	RTD-032
	L102, L202	Trap coil	RTF-152
	L101, L201	MPX filter	RTF-138
	L103, L203	Peaking coil	RTF-129

CAPACITORS

Mark	Symbol & Description	Part No.
	C120, C220 C125, C225	CEAR27M50 CEJAR33M50
	C121, C221	CEAR82M50
	C113, C114, C118, C122, C124, C130, C133, C213, C214, C218, C222, C224, C230, C233	CEA010M50
	C117, C217, C319	CEA4R7M50
	C103, C203	CEANL010M50
	C107, C109, C111, C126, C207, C209, C211, C226, C307	CEA100M16
	C104, C106, C204, C206, C306	CEA330M16
	C303 – C305, C318	CEA101M16
	C302	CEA101M25

Mark	Symbol & Description	Part No.
	C320, C321	CEA221M16
	C301	CEA102M25
	C123, C223	CKDYB681K50
	C310, C311	CKDYX332K25
	C116, C216	CKDYX472K25
	C129, C229	CKDYX562K25
	C128, C228, C309	CKDYX682K25
	C127, C227	CKDYX822K25
	C108, C208	CKDYX103K25
	C110, C210, C312	CKDYX153K25
	C119, C219	CKDYX183K25
	C115, C215	CKDYX333K25
	C313	CQPA562J100
	C132, C232	CCDSL101K500
	C101, C102, C131, C201, C202, C231	CKDYB471K50
	C105 C205	CCDSL220J50

RESISTORS

Note: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Symbol & Description	Part No.
★	V101, V102, V201, V202 Semi-fixed (22k)	VRTB6VS223
	V103, V203 Semi-fixed (150k)	VRTB6VS154
⚠	R316, R301, R303	RD1/2PMF □□□J
	R104, R204	RD1/4PM □□□J
	R105, R205	RD1/4PM753JNL
	Other resistors	RD1/6PM □□□J

OTHERS

Mark	Symbol & Description	Part No.
	Shield case	RNH-209
	Phone jack with switch (MIC)	RKN-092 (RKN-087)
	Terminal (LINE)	RKB-023

Indicator Unit

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
★★	Q401	IR2E27A
★	D405 – D410, D413	SEL4214S
★	D401 – D404, D411, D412	SEL4914A

CAPACITORS

Mark	Symbol & Description	Part No.
	C403	CKDYF473Z50
	C401, C402	CEA330M16
	C404, C405	CKDYB471K50

RESISTORS

Note: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Symbol & Description	Part No.
	All resistors	RD1/6PM □□□J

VR Unit

RESISTORS

Note: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Symbol & Description	Part No.
★	VR501 Variable (REC LEVEL)	RCV-118

Power Switch Unit

SWITCH

Mark	Symbol & Description	Part No.
⚠★★	S601 Push switch (POWER)	RSA-063

6. PACK

Mark	No.	Part
	1	RH(
		(CT
		RH(
		(CT
		RH(
		(CT
		RH(
		(CT
	2	RH/
	3	RH/
	4	RR(
		RR(
	5	RD(

ert the resistance value
e the part no. as before.

	Part No.
	RD1/6PM □□□J

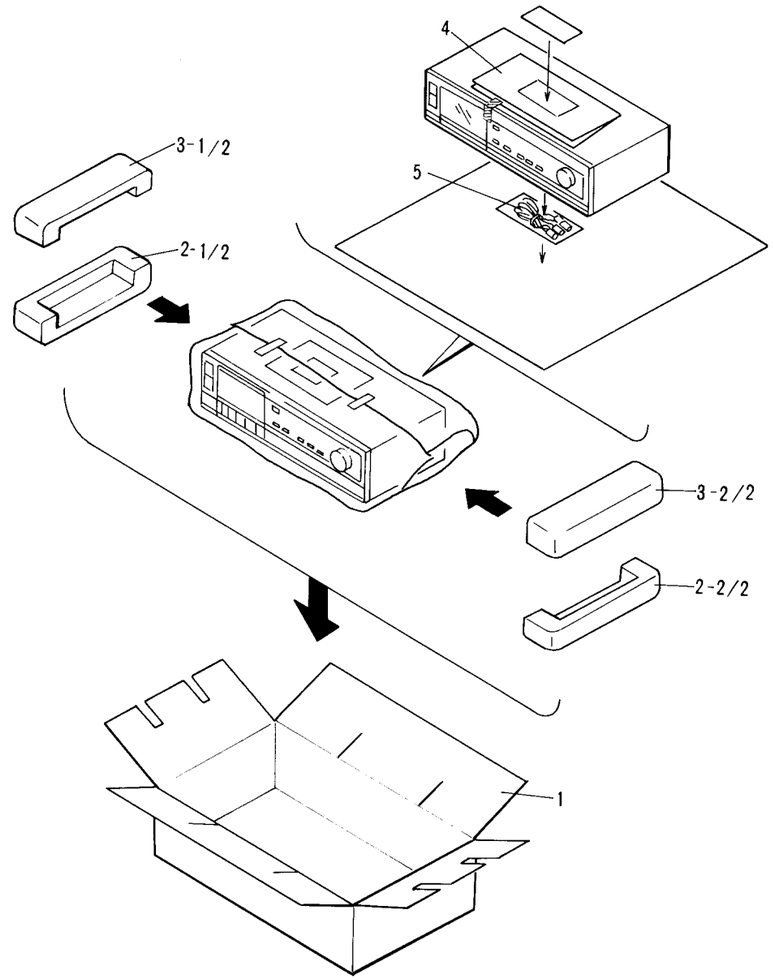
ert the resistance value
e the part no. as before.

	Part No.
EL)	RCV-118

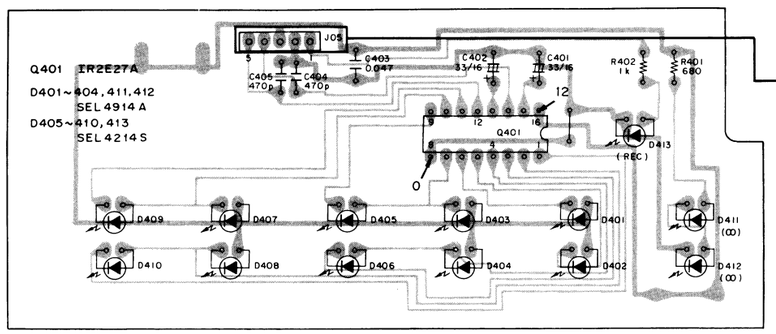
	Part No.
	RSA-063

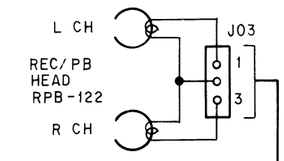
6. PACKING

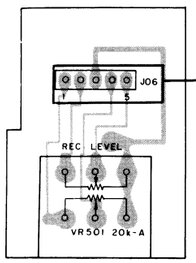
Mark	No.	Part No.	Description
	1	RHG-814 (CT-660 black) RHG-817 (CT-660 silver) RHG-819 (CT-S11 black) RHG-820 (CT-S11 silver)	Packing case
	2	RHA-274	Pad A
	3	RHA-275	Pad B
	4	RRB-255 (CT-660) RRB-256 (CT-S11)	Operating instructions (English)
	5	RDE-010	Connection cord

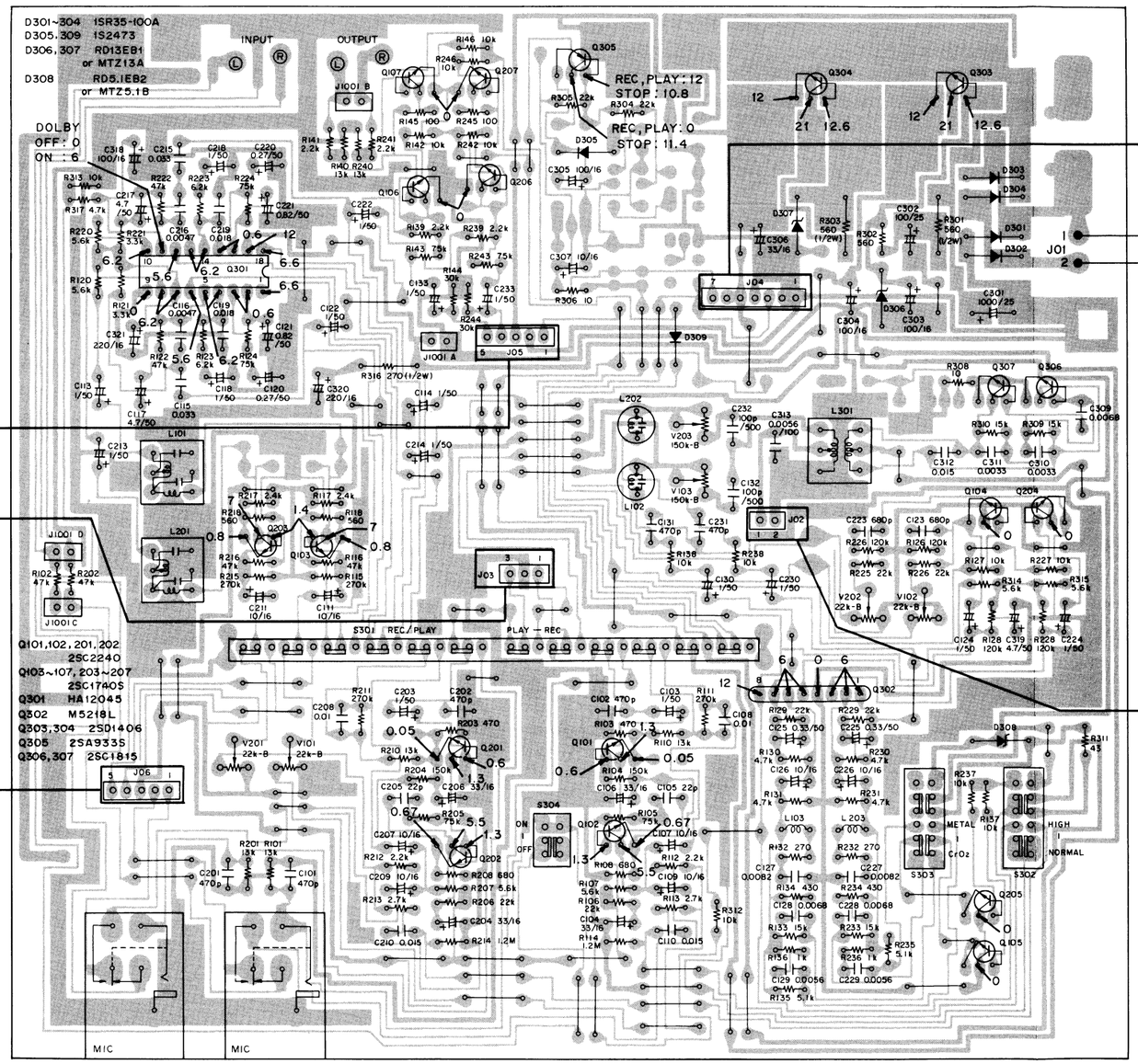


7. P.C.BOARDS CONNECTION DIAGRAM









MAIN UNIT

Q301 Q203 Q103 V201 V101 — Q106 Q107 — Q201 Q206 Q202 Q207 — Q101 Q102 Q305 — V103 V203 — Q304 Q302 V202 V102 — Q104 Q105 Q205 Q204 Q303 Q307 Q306

D301~304 1SR35-100A
D305,309 1S2473
D306,307 RD13EB1 or MTZ13A
D308 RD5.1EB2 or MTZ5.1B

DOLBY OFF : 0 ON : 6

INPUT OUTPUT

REC, PLAY : 12 STOP : 10.8
REC, PLAY : 0 STOP : 11.4

Q101,102,201,202 2SC2240
Q103~107,203~207 2SC1740S
Q301 HA12045
Q302 M5218L
Q303,304 2SD1406
Q305 2SA9335
Q306,307 2SC1815

S301 REC/PLAY — PLAY — REC

S304 ON / OFF

S303 METAL / CrO2

S302 HIGH / NORMAL

MIC MIC

J03 J04 J05 J06 J01 J02

J04
1 PLAY
STOP
7
S1 : PLAY RSN-034
MOTOR RXM-130
S2 : FF/REW RSN-035

J01 1 2

J02
1 2
ERASE HEAD RPB-085

POWER SWITCH UNIT

AC POWER CORD RDG-048
AC 120V 60Hz

J07 J08 S601 POWER

T1 RTT-437

J03 1 3

J06 5 1

D411 (00) D412 (00)

R102 47k R202 47k

J1001 A B C

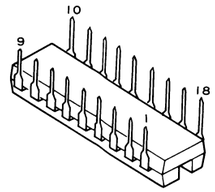
LEVEL

01 20k-A

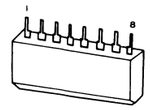
IT

External Appearance of Transistors and ICs

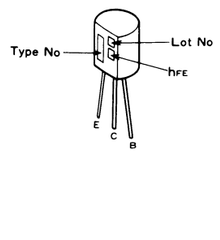
HA12045



M5218L



2SC2240
2SC1815



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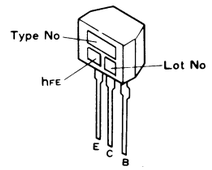

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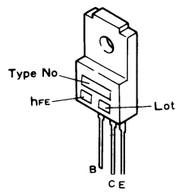

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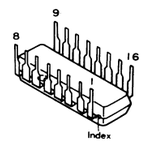


9. EXPLODED VIEW

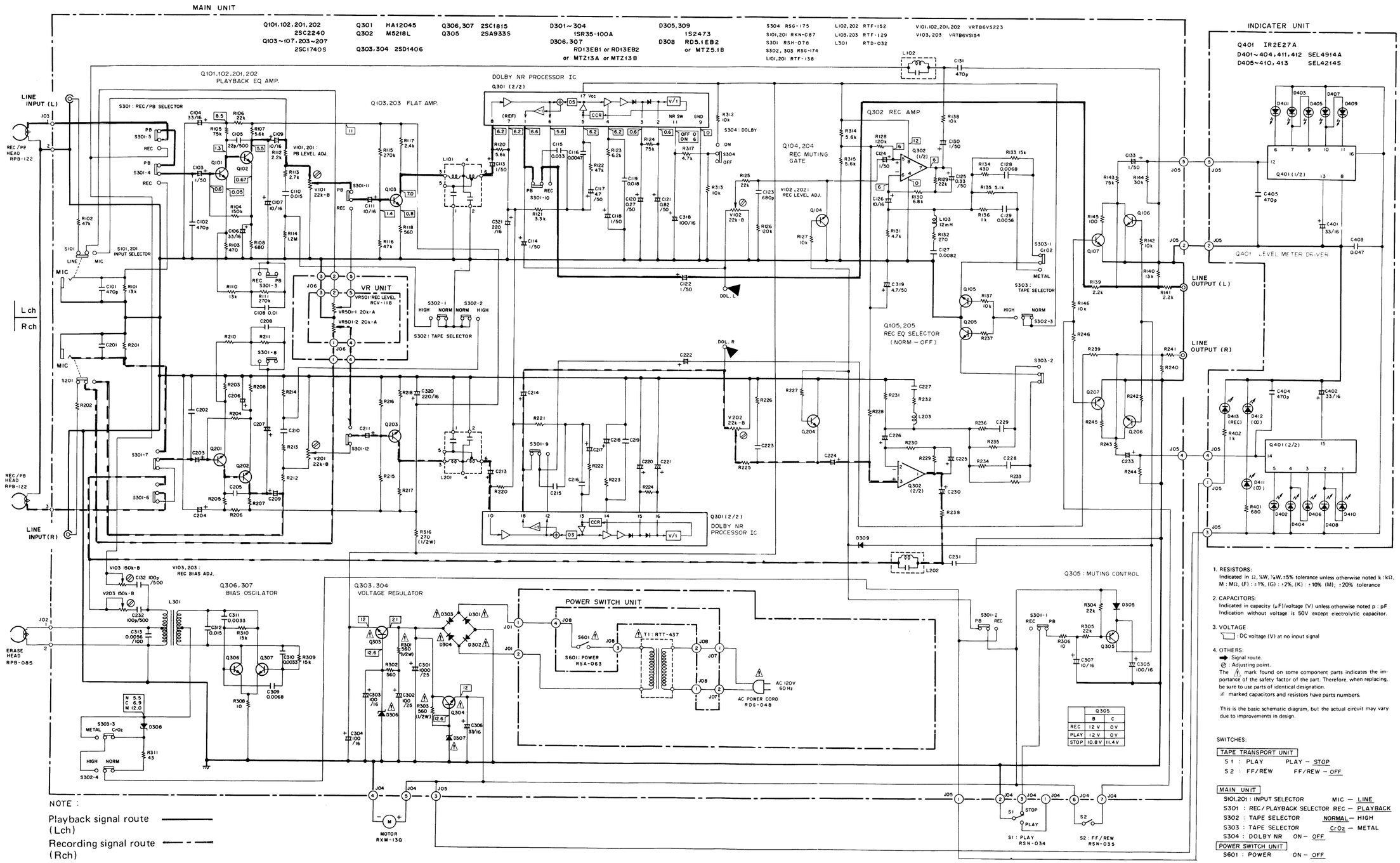
NOTES:

- *Parts without part number cannot be supplied.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.*
  ★★ GENERALLY MOVES FASTER THAN ★.
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.

Mark	No.	Part No.	Description
★★	1	REB-468	Counter belt
	2	.....	
	3	REC-436	Door damper
	4	RBL-137	Eject spring
	5	RBL-123	REC Joint
	6	RBL-124	Grounding spring (not used black color models)
	7	RBL-125	Door spring
	8	RBK-177	Hold spring
	9	RNH-417	Knob spring
	10	.....	
⚠ ★	11	RTT-437	Power transformer (120V)
⚠	12	RDG-048	AC Power cord
⚠	13	REC-395	Strain relief
	14	.....	
	15	RAW-211	Tape counter
	16	RAH-711 (Black)	Front panel
		RAH-710 (Silver)	
	17	RAH-630 (Selver)	Jack label
		RAH-707 (Black)	
	18	RAH-637	Display panel
		(CT-660 black without D type)	
		RAH-638	
		(CT-660 silver)	
		RAH-650 (CT-S11, CT-660 [BK]/D)	
	19	RAH-639	Meter panel
	20	RAH-665	Door panel
		(CT-660 black without D type)	
		RAH-666	
		(CT-660 silver)	
		RAH-667 (CT-S11, CT-660 [BK]/D)	
	21	RNM-060	Door
		(CT-660 black)	
		RNM-061	
		(CT-660 silver)	
		RNM-062	
		(CT-S11 black)	
		RNM-063	
		(CT-S11 silver)	
	22	RAC-577	Knob (DOLBY NR, TAPE SELECTOR)
	23	RAC-597	Knob (REC LEVEL)
	24	RAC-598	Knob (POWER)
	25	RAC-596	Knob (EJECT)
	26	RAC-525 (Black)	Knob (PLAY)
		RAC-523 (Silver)	
	27	RAC-526 (Black)	Knob (PAUSE)
		RAC-524 (Silver)	
	28	RAC-529 (Black)	Knob (REC)
		RAC-527 (Silver)	
	29	RAC-530 (Black)	Knob (REW)
		RAC-528 (Silver)	
	30	RAC-532 (Black)	Knob (FF)
		RAC-531 (Silver)	
	31	RAC-534 (Black)	Knob (STOP)
		RAC-533 (Silver)	
	32	REB-513	Skid
	33	RNA-730 (Black)	Bonnet case
		RNA-731 (Silver)	
	34	RNT-059	Panel stay
	37	BBZ30P080FZK	Screw 3 x 8
	38	BBZ30P060FMC	Screw 3 x 6
	39	PMA30P060FMC	Screw 3 x 6
	40	YE25FUC	Washer E-type
	41	ARZ26P060FMC	Screw 2.6 x 6
	42	RBA-090	Screw 3 x 10
	43	.....	
	44	RBF-073	Washer
	45	RBH-909	Pause button spring
	46	WC30FMC	Washer
	51		Tape transport unit
	52		Chassis
	53		Rear panel
	54		Cushion
	55		LED holder
	56		Knob shaft
	57		Main unit
	59		Power switch unit
	60		Indicator unit
	61		VR Unit
	65		Remain display paper
	66		Leg assembly
	67		Cushion

8. SCHEMATIC DIAGRAM

NOTE:
The indicated semiconductors are representative ones only. Other alternative semiconductors may be used and are listed in the parts list.



Q305	B	C
REC	12 V	0 V
PLAY	12 V	0 V
STOP	10.8 V	11.4 V

1. RESISTORS:
Indicated in Ω, ¼W, ⅛W, ±5% tolerance unless otherwise noted k : kΩ, M : MΩ, (F) : ±1%, (G) : ±2%, (K) : ±10% (M) : ±20% tolerance

2. CAPACITORS:
Indicated in capacity (μF)/voltage (V) unless otherwise noted p : pF
Indication without voltage is 50V except electrolytic capacitor.

3. VOLTAGE
: DC voltage (V) at no input signal

4. OTHERS:
➡ : Signal route.
⊘ : Adjusting point.
The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
※ marked capacitors and resistors have parts numbers.

This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.

SWITCHES:

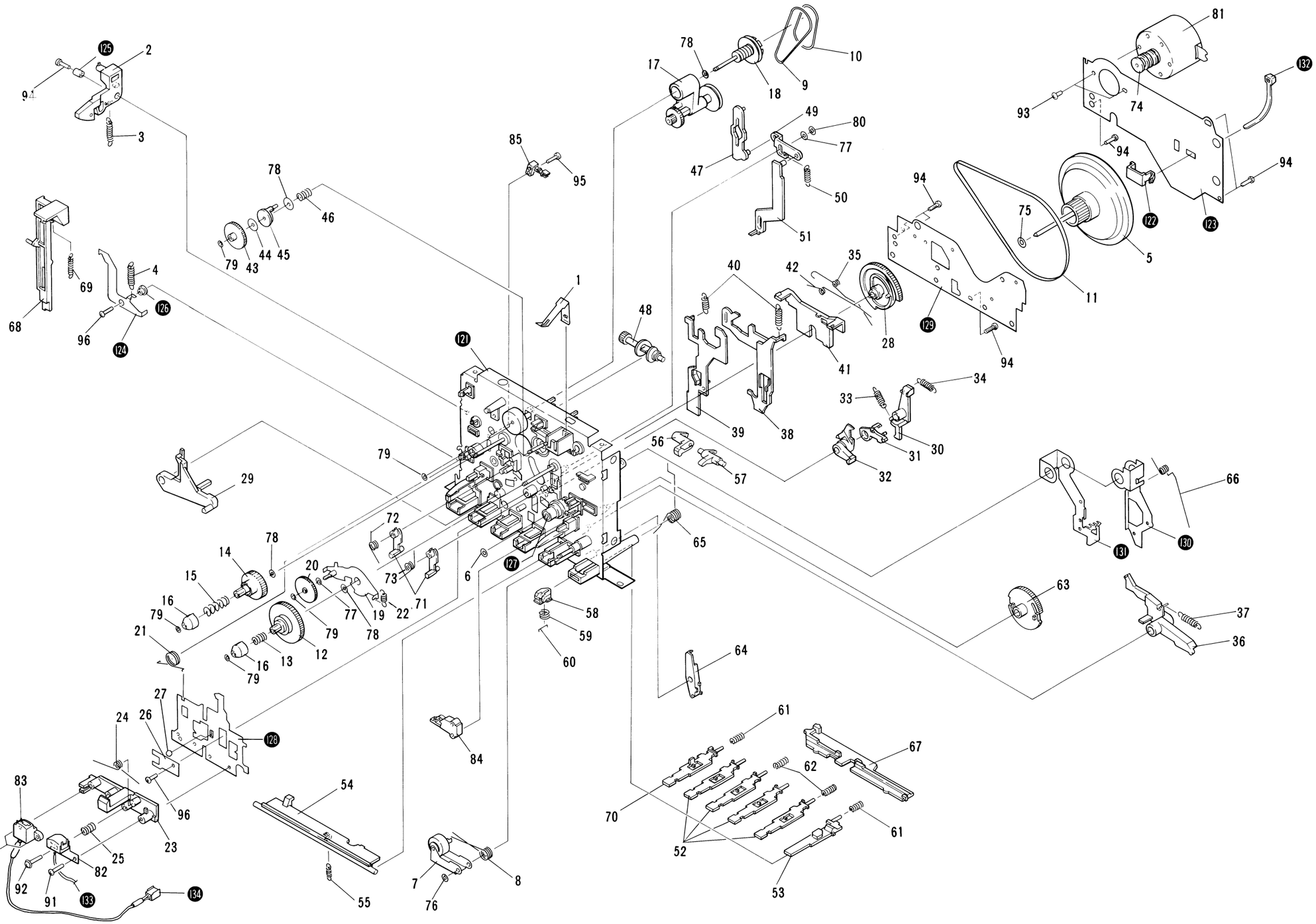
TAPE TRANSPORT UNIT
S1 : PLAY — PLAY – STOP
S2 : FF/REW — FF/REW – OFF

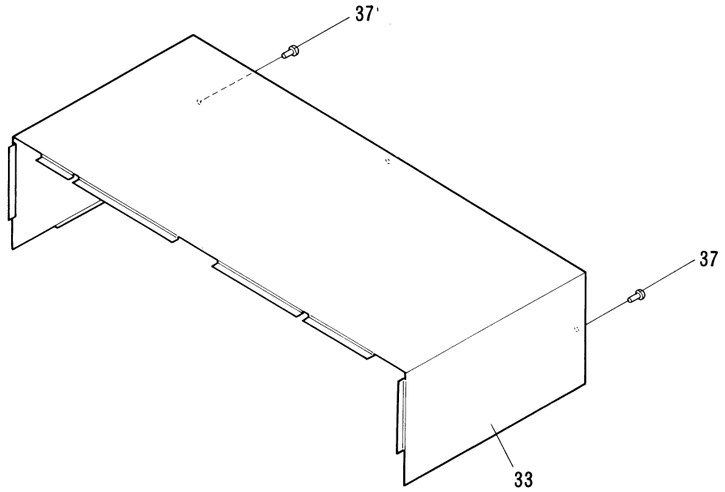
MAIN UNIT
S101,201 : INPUT SELECTOR — MIC – LINE
S301 : REC/PLAYBACK SELECTOR — REC – PLAYBACK
S302 : TAPE SELECTOR — NORMAL – HIGH
S303 : TAPE SELECTOR — CrO2 – METAL
S304 : DOLBY NR — ON – OFF

POWER SWITCH UNIT
S601 : POWER — ON – OFF

The underlined indicates the switch position.

Tape Transport Unit

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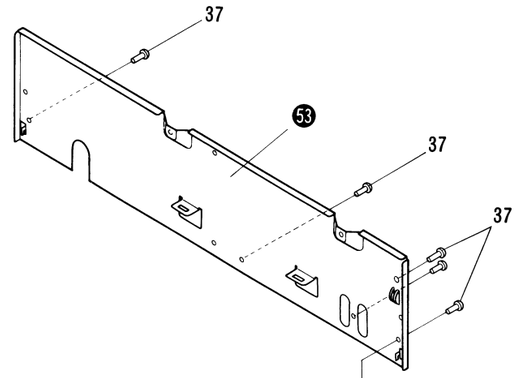
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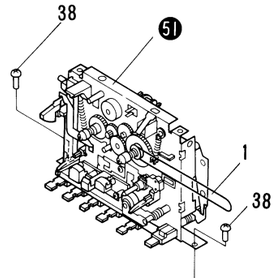
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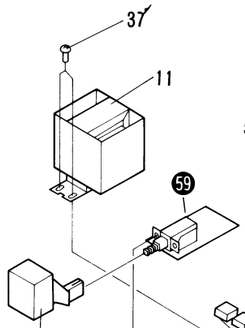
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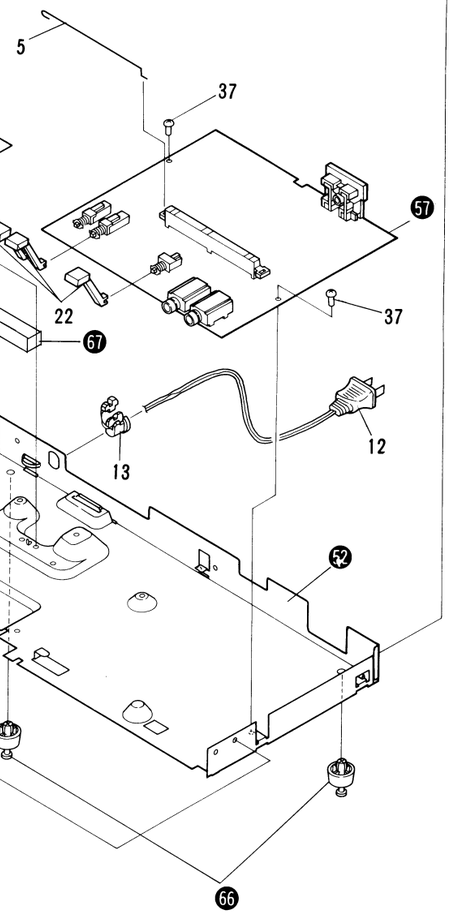
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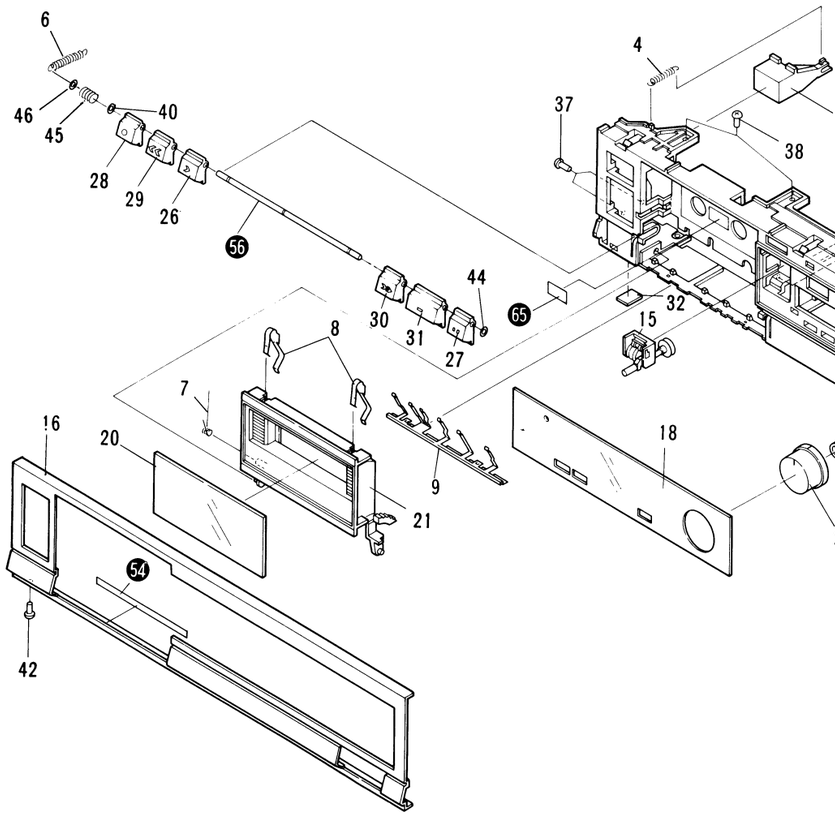
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NOTE:

- ***Parts without part number cannot be supplied.***
- ***The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.***
- ***For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.***
  ★★ GENERALLY MOVES FASTER THAN ★.
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.

Parts List of Tape Transport Unit

Mark	No.	Part No.	Description
	1	RBK-166	Half set spring
	2	RNM-003	Eject lever
	3	RBL-106	Return spring
	4	RBL-103	Stopper return spring
	5	RXC-065	Flywheel assembly
	6	RBF-030	Oil stopper washer
★★	7	RXB-495	Pinch arm assembly
	8	RBH-890	Pinch pressure spring
★★	9	REB-530	Drive belt A
★★	10	REB-531	Drive belt B
★★	11	REB-529	Capstan belt
★★	12	RXC-064	TU reel base assembly
	13	RBL-132	Hub spring A
★★	14	RNL-988	Supply reel base
	15	RBL-105	Hub spring B
	16	RNL-984	Hub
	17	RXC-067	Drive arm assembly
	18	RXC-068	Drive pulley assembly
	19	RXC-080	Gear arm assembly
	20	RNK-998	Idler gear
	21	RBL-118	HB return spring
	22	RBL-108	Arm return spring
	23	RNM-006	Sub-head base
	24	RBL-152	HB drive spring
	25	RBH-723	Head adjust spring
	26	RBK-192	HB hold spring
	27	REF-026	Steel ball
	28	RNM-078	Cam gear
	29	RNM-007	Action lever
	30	RNM-008	Gear lever A
	31	RNM-009	Gear lever B
	32	RNM-010	Gear lever C
	33	RBL-119	Gear lever spring A
	34	RBL-155	Gear lever spring B
	35	RBL-131	Trigger spring
	36	RNM-011	Pause lever
	37	RBH-880	Pause lever spring
	38	RNM-012	FF action plate
	39	RNM-013	REW action plate
	40	RBL-110	Action plate spring
	41	RNM-014	Brake plate
	42	RBL-120	Brake spring
	43	RNK-998	Idler gear
	44	RED-194	Detector felt
	45	RNL-318	Detector disk
	46	RBH-885	Detector spring
	47	RNM-015	Detector lever
	48	RNL-322	Cam gear
	49	RNL-275	Link
	50	RBH-886	Link return spring
	51	RNM-016	Stop lever
	52	RNM-017	Operation button
	53	RNM-018	Pause button
	54	RNM-019	Lock plate
	55	RBL-111	Lock plate spring
	56	RNM-020	Joint L
	57	RNM-021	Joint R
	58	RNL-334	Ratchet holder
	59	RBH-888	Ratchet spring
	60	RBH-870	Ratchet pin
	61	RBH-909	Pause button spring
	62	RBH-889	Button return spring
	63	RNL-831	Cam gear R
	64	RNM-022	Gear lever R
	65	RBL-112	Trigger spring R
	66	RBL-113	REC action spring
	67	RNM-023	REC joint arm
	68	RNM-024	REC detector arm
	69	RBL-114	Detector arm spring
	70	RNM-025	REC button
	71	RNL-285	HB lock lever
	72	RBL-117	Lock lever spring L
	73	RBH-908	Lock lever spring R
	74	RNM-026	Motor pulley
	75	WA026D047D025	Washer
	76	RBF-083	Washer
	77	WA021D040D025	Washer
	78	RBF-071	Washer
	79	RBF-076	Washer
	80	YS20FBT	Washer CS-type
★★	81	RXM-130	Motor
★★	82	RPB-122	REC/PB head
★	83	RPB-085	Erase head
★★	84	RSN-034	Lever switch (S1)
★★	85	RSN-035	Spring switch (S2)
	91	PMZ20P120FMC	Screw 2 x 12
	92	iMZ20Y120FMC	Screw 2 x 12
	93	BMZ26P030FMC	Screw 2.6 x 3
	94	BBZ26P080FZK	Screw 2.6 x 8
	95	BBZ20P080FMC	Screw 2 x 8
	96	BBZ26P100FMC	Screw 2.6 x 10

Mark	No.	Part No.	Description
	121		Chassis
	122		Thrust receptacle
	123		Flywheel receptacle
	124		Eject stopper
	125		Collar A
	126		Collar B
	127		Metal holder assembly
	128		Head base
	129		Plate
	130		REC action lever
	131		REC action plate
	132		Binder
	133		Connector assembly 3-p
	134		Connector assembly 2-p

10. ADJUSTMENTS

10.1 MECHANICAL ADJUSTMENTS

Prior to Adjustment

Clean the both reel base, the capstan and the pinch roller with an alcohol moistened swab.

Pinch Roller Pressure Adjustment

1. Put the tape deck into the playback mode.
2. Gently push against the pinch roller arm with the tension gauge and separate the pinch roller slightly from the capstan.
3. Then the pinch roller back onto the capstan, and read the value when the pinch roller starts to rotate. If the reading fails to lie within 300 ~ 500g, replace the pinch pressure spring.

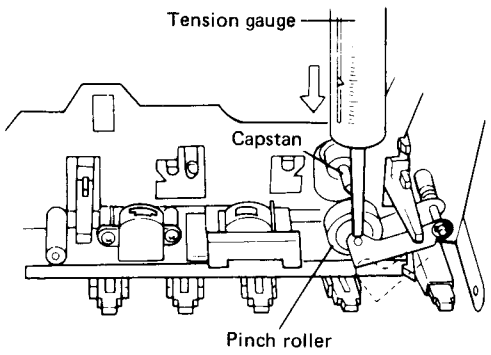


Fig. 10-1 Pinch roller pressure adjustment

Reel Base Torque Adjustment

Measure the torque with the torque meter during playback, fast forward (FF) and rewind (REW) modes. The measured values should normally lie within the allowably ranges listed in the table 1.

If the measured values lie outside the relevant ranges, replace the TU (take-up) reel base assembly and/or supply reel base assembly, TU idler, or drive arm full assembly.

Table 1

	TU reel base	Supply reel base
Playback mode	38 – 57g.cm	* 1.5 – 5g.cm
FF mode	75 – 135g.cm	* 1.5 – 5g.cm
REW mode	* 1.5 – 5g.cm	75 – 135g.cm

**Denotes back tension torque.*

Tape Speed Adjustment

1. Connect the frequency counter to the DOL.L terminal on the deck assembly.
2. Playback the 3kHz portion of the STD-301 test tape. At the beginning, the frequency should be lie within the 3000Hz~3010Hz range, and may be adjusted by turning the semi-fixed resistor located in the capstan motor adjustment hole as shown in Fig. 10-2.

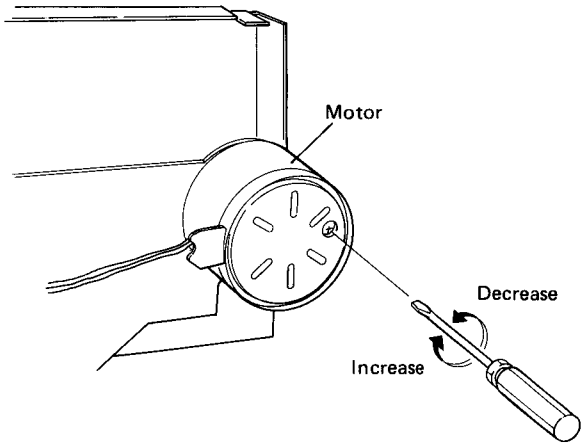


Fig. 10-2 Tape speed adjustment

REC Joint Check and Adjustment

Move the REC joint mechanism catching position if the slide switch is not fully switched when the tape transport unit is in recording mode.

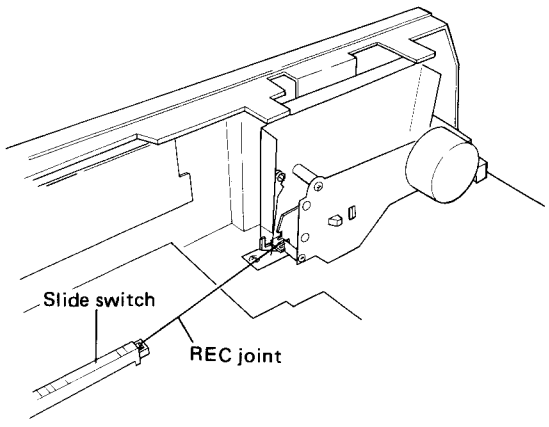


Fig. 10-3 REC joint check and adjustment

10.2 ELECTRICAL ADJUSTMENTS

Adjustment Conditions

1. The mechanical adjustments must be completed first.
2. The head must be cleaned and demagnetized.
3. Allow the deck to age for at least a few minutes before commencing any electrical adjustments.
4. The reference signal is 0dB=1Vrms.
5. Connect a 50 kilo-ohm (or between 47 to 52 kilo-ohm) load resistance to the OUTPUT terminals.
6. Unless otherwise specified, the switches listed below are left in the positions indicated.
   DOLBY NR : OFF
   TAPE SELECTOR : NORM

Test Tapes

STD-331B : Playback adjustments (See Fig. 10-4)
STD-608A : NORMAL blank tape
STD-603 : CrO_2 blank tape
STD-610 : METAL blank tape

List of Adjustments

1. Head azimuth adjustment.
2. Playback equalizer check.
3. Playback time constant switching check.
4. Playback level adjustment.
5. Level meter check.
6. Recording and playback frequency repsonse adjustment.
7. Recording level adjustment.

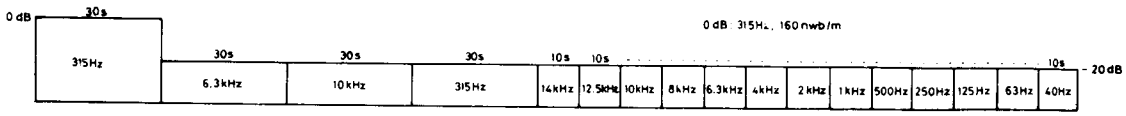


Fig. 10-4 Contents of the test tape STD-331B

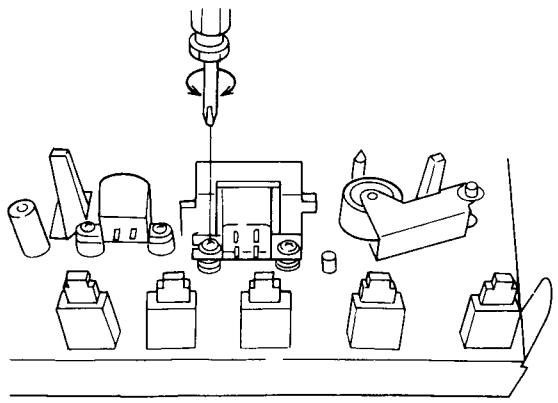


Fig. 10-5 Head azimuth adjustment

Test tape	STD-331B
Tape selector	NORM
DOLBY NR switch	OFF

• Due to "edge effect", compensate the right changed by -1dB at 63Hz.

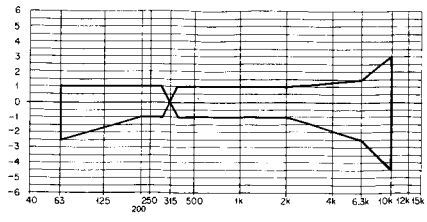


Fig. 10-6 Allowable playback frequency response zone

- Set the DOLBY NR switch to the OFF position.

1. Head Azimuth Adjustment
- Turn V101 and V201 to maximum position (fully clockwise).

	Mode	Input signal & test tape	Adjustment location	Measuring location	Adjustment value	Remarks
1	STOP	Set the TAPE SELECTOR switch to the NORM position.				
2	PLAY	Play the 10kHz/−20dB section of the STD-331B test tape.	Head azimuth adjustment screw. (See Fig. 10-5)	Left and right OUTPUT terminals.	Maximum playback signal level.	
3	STOP	Lock the screw with screw lock after completing the adjustment.				

2. Playback Equalizer Check

	Mode	Input signal & test tape	Adjustment location	Measuring location	Adjustment value	Remarks
1	STOP	Set the TAPE SELECTOR switch to the NORM position.				
2	PLAY	Play the 315Hz/−20dB and 6.3kHz/−20dB section of the STD-331B test tape.	Confirm	Left and right OUTPUT terminals.	The 6.3kHz playback level is −0.5±2dB against 315Hz level.	

3. Playback Time Constant Switching Check
- Put the deck into playback mode with no cassette loaded.
- Check that the noise level changes at the line playback output terminals when the chrome detector switch in the top of the tape transport unit is switched on and off.

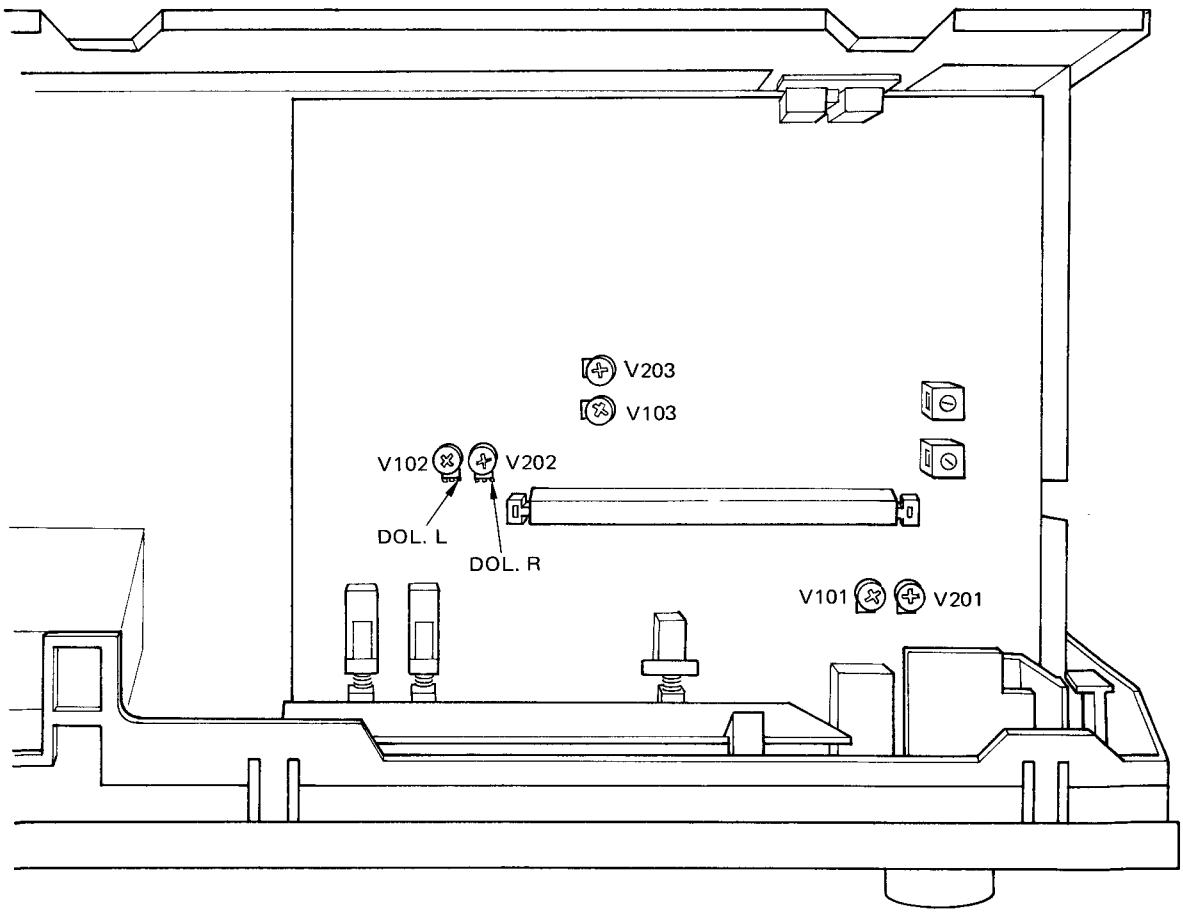


Fig. 10-7 Adjustments locations

4. Playback Level Adjustment

• This adjustment determines the DOLBY NR level, and must be performed with great care.

	Mode	Input signal & test tape	Adjustment location	Measuring location	Adjustment value	Remarks
1	STOP	Set the TAPE SELECTOR switch to the NORM position.				
2	PLAY	Play the 315Hz/0dB section of the STD-331B test tape.	V101 (Left channel) V201 (Right channel)	TP.DOL L (L ch.) TP.DOL R (R ch.)	−7.7dBv (412.1mV)	

5. Level Meter Check

	Mode	Input signal & test tape	Adjustment location	Measuring location	Adjustment value	Remarks
1	REC-PAUSE	Apply a 315Hz/−10dBv (316mV) signal to the LINE INPUT terminals.	REC LEVEL control	TP.DOL L (L ch.) TP.DOL R (R ch.)	Check that the level meters "0dB" light up within −7.7dBv±1.8dB of the signal output level.	

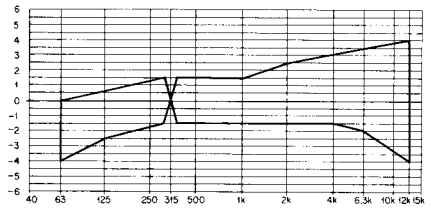
6. Recording and Playback Frequency Response Adjustment

	Mode	Input signal & test tape	Adjustment location	Measuring location	Adjustment value	Remarks
1	STOP	Set the TAPE SELECTOR switch to the NORM position.				
2	REC-PAUSE	Apply a 315Hz/−30dBv (31.6mV) signal to the LINE INPUT terminals.	REC LEVEL control	TP.DOL L (L ch.) TP.DOL R (R ch.)	−27.7dBv (41.2mV)	
3	REC/PLAY	Record the above signal level onto the STD-608A test tape at 315Hz and 6.3kHz, and playback.	V103 (Left channel) V203 (Right channel)	Left and right OUTPUT terminals.	The 6.3kHz playback level is 0dB against 315Hz level (Playback the signals recorded on the STD-608A)	
4		Change the test tape, tape selector and DOLBY NR switch positions, and check that the frequency response is satisfactory (See Fig. 10-8). If the response does not lie within the specified range, readjust V103 and V203 that the 6.3kHz playback level is +1 ~ −0.5dB against 315Hz level in the step 3.				

7. Recording Level Adjustment

	Mode	Input signal & test tape	Adjustment location	Measuring location	Adjustment value	Remarks
1	STOP	Set the TAPE SELECTOR switch to the NORM position.				
2	REC-PAUSE	Apply a 315Hz/−10dBv (316mV) signal to the LINE INPUT terminals.	REC LEVEL control	TP.DOL L (L ch.) TP.DOL R (R ch.)	−7.7dBv (412.1mV)	
3		Set the DOLBY NR switch to the ON position.				
4	REC/PLAY	Record the above signal level onto the STD-608A test tape, and playback.	V102 (Left channel) V202 (Right channel)	TP.DOL L (L ch.) TP.DOL R (R ch.)	−7.7dBv (412.1mV)	
5		Set the TAPE SELECTOR switch to the CrO_2 position.				
6		Record the above signal onto the STD-603 test tape, and playback.	Confirm	TP.DOL L (L ch.) TP.DOL R (R ch.)	−7.7dBv±1.5dB	
7		Set the TAPE SELECTOR switch to the METLAL position.				
8		Record the above signal onto the STD-610 test tape, and playback.	Confirm	TP.DOL L (L ch.) TP.DOL R (R ch.)	−7.7dBv±1.5dB	

Test tape	STD-608A
Tape selector	NORM
DOLBY NR switch	OFF



Test tape	STD-608A
Tape selector	NORM
DOLBY NR switch	ON

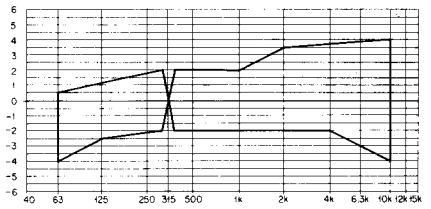
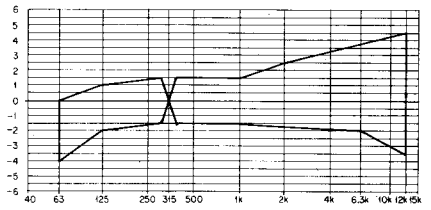


Fig. 10-8-1 Allowable recording and playback frequency response zone (NORM)

Test tape	STD-603
Tape selector	CrO_2
DOLBY NR switch	OFF



Test tape	STD-603
Tape selector	CrO_2
DOLBY NR switch	ON

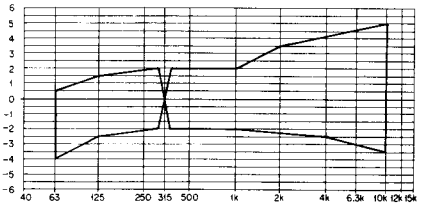
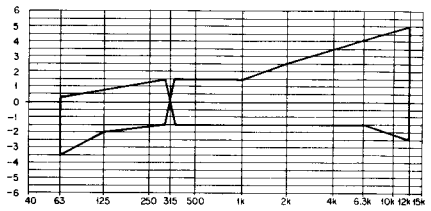


Fig. 10-8-2 Allowable recording and playback frequency response zone (CrO_2)

Test tape	STD-610
Tape selector	METAL
DOLBY NR switch	OFF



Test tape	STD-610
Tape selector	METAL
DOLBY NR switch	ON

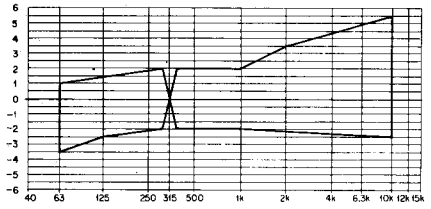


Fig. 10-8-3 Allowable recording and playback frequency response zone (METAL)

10. RÉGLAGES

10.1 RÉGLAGES DES MÉCANISMES

Avant de faire les réglages

Nettoyer les deux supports de bobine, le cabestan et le galet-presseur avec un bâtonnet imprégné d'alcool.

Réglage de pression du galet-presseur

1. Régler la platine-cassette en mode de lecture.
2. Repousser progressivement le bras supportant le galet-presseur à l'aide du tensiomètre et séparer légèrement le galet-presseur du cabestan.
3. Laisser revenir le galet-presseur contre le cabestan et interpréter la valeur indiquée dès que le galet-presseur commence à tourner. Si l'indication obtenue ne se trouve pas dans les limites de 300 à 500gr., remplacer le ressort du galet-presseur.

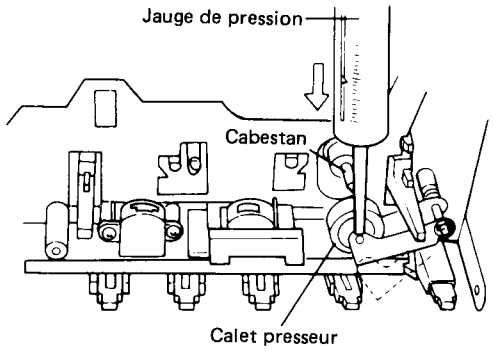


Fig. 10-1 Réglage de la force d'appui du galet-presseur

Réglage du couple de support de bobine

Mesurer le coupledu support de bobine à l'aide d'un couplemètre au cours des modes de lecture, avance rapide (FF) et de retour rapide (REW). Les valeurs relevées doivent normalement se trouver dans les limites admissibles qui sont indiquées dans le tableau 1.

Si les valeurs mesurées sont en-dehors de la gamme indiquée, remplacer l'ensamble support de bobine réceptrice (TU) et/or l'ensemble support de bobine débitrice, la poulie intermédiaire TU ou l'ensemble complet du bras d'entraînement.

Tableau 1

	Support de bobine débitrice	Support de bobine réceptrice
Mode de lecture	38 à 57 gr.cm	*1,5 à 5 gr.cm
Mode d'avance rapide	75 à 135 gr.cm	*1,5 à 5 gr.cm
Mode de retour rapide	*1,5 à 5 gr.cm	75 à 135 gr.cm

**Indiquent des valeurs de contre-tension.*

Réglage de la vitesse de défilement de la bande

1. Raccorder un fréquencemètre à la prise "DOL. L" de l'ensemble platine.
2. Lire le passage préenregistré de 3kHz de la bande d'étalonnage STD-301. Dès le début, la fréquence indiquée doit se trouver entre 3000 et 3010Hz, celle-ci pouvant être ajustée en tournant la résistance ajustable qui se trouve dans le trou de réglage du moteur d'entraînement du cabestan, comme représenté sur la figure 10.2.

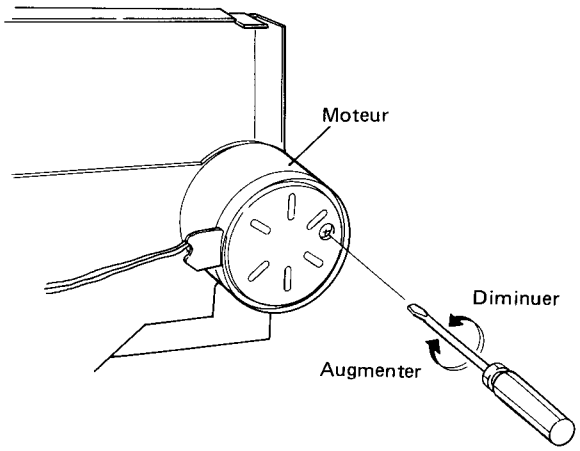


Fig. 10-2 Réglage de la vitesse de défilement de la bande

Réglage et vérification du raccord d'enregistrement (REC)

Déplacez la position d'arrêt du mécanisme du raccord d'enregistrement (REC) si le commutateur à curseur n'est pas complètement enclenché lorsque l'ensemble de transport de bande est placé en mode d'enregistrement.

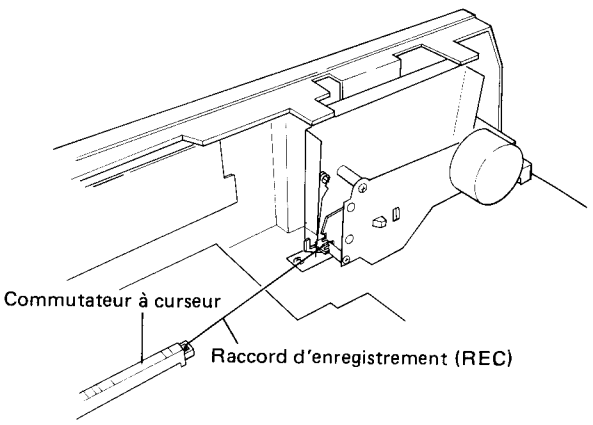


Fig. 10-3 Réglage et vérification du raccord d'enregistrement (REC)

10.2 RÉGLAGES ÉLECTRIQUES

Conditions nécessaires pour effectuer les réglages

1. Les réglages des mécanismes doivent avoir été faits avant.
2. La tête magnétique doit être propre et démagnétisée.
3. La platine-cassette doit avoir fonctionnée pendant quelques minutes avant de commencer les réglages électriques.
4. Le signal de référence est de 0dB=1V effi.
5. Raccorder une résistance de charge de 50 k-ohms (ou de 47 à 52 k-ohms) aux prises de sortie "OUTPUT".
6. A moins d'une indication contraire, les commutateurs mentionnés ci-dessous doivent se trouver dans la position indiquée.
   DOLBY NR : Sur OFF
   TAPE SELECTOR : Sur NORM

Bandes de mesure

STD-331B : Réglage de lecture (Fig. 10-4)
STD-608A : Bande vierge ordinaire (NORMAL)
STD-603 : Bande vierge au chrome (CrO_2)
STD-610 : Bande vierge au fer (METAL)

Liste des réglages à exécuter

1. Réglage d'azimut de tête magnétique
2. Contrôle de l'égaliseur de lecture
3. Vérification de la commutation de la constante temps d'enregistrement
4. Réglage de niveau de lecture
5. Contrôle de fonctionnement de décibelmètre
6. Calage de réponse en fréquence d'enregistrement et de lecture
7. Réglage du niveau d'enregistrement

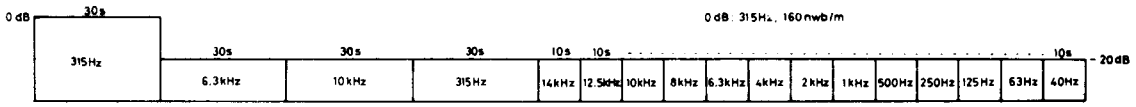


Fig. 10-4 Signaux préenregistrés sur la bande d'étalonnage STD-331B

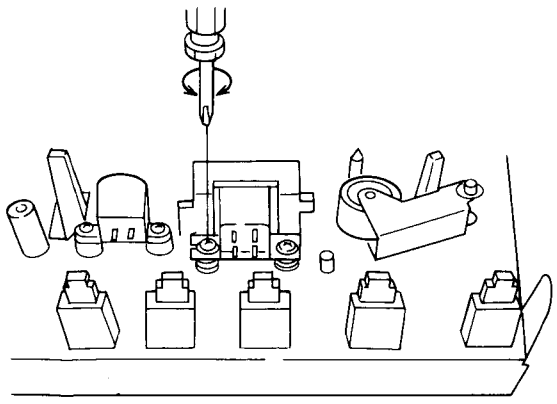


Fig. 10-5 Réglage d'azimut de tête magnétique

Bande d'étalonnage	STD-331B
Sélecteur de bande	NORM
Commutateur DOLBY NR	OFF

• A cause de "l'effet d'arête", compenser le canal droit de −1dB à 63Hz.

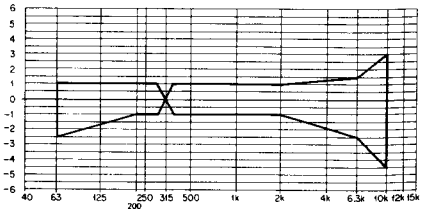


Fig. 10-6 Réponse en fréquence admissible en lecture

- Le commutateur DOLBY NR doit être placé en position OFF.

1. Réglage d'azimut de tête magnétique

- Tourner V101 et V201 sur leur position maximum (dans le sens maximum des aiguilles d'une montre)

	Mode	Signal appliqué et bande d'étalonnage	Emplacement du réglage	Emplacement de la borne de mesure	Valeur relevée	Observations
1	ARRÈT	Placer le sélecteur de bande (TAPE SELECTOR) en position "NORM".				
2	LECTURE	Lire le passage préenregistré de 10kHz/–20dB de la bande d'étalonnage STD-331B.	Vis de réglage d'azimut de téte. (Consulter la fugure 10-5).	Bornes de sortie droite et gauche "OUTPUT".	Niveau maximal du signal de lecture.	
3	ARRÈT	Bloquer la vis de réglage à la peinture lorsque le réglage est terminé.				

2. Contrôle de l'égaliseur de lecture

	Mode	Signal appliqué et bande d'étalonnage	Emplacement du réglage	Emplacement de la borne de mesure	Valeur relevée	Observations
1	ARRÈT	Placer le sélecteur de bande (TAPE SELECTOR) en position "NORM".				
2	LECTURE	Lire le passage préenregistré de 315kHz/–20dB et de 6,3kHz/–20dB de la bande d'étalonnage STD-331B.	Contrôler	Bornes de sortie droite et gauche "OUTPUT".	Le niveau de lecture de 6,3kHz est de –0,5±2dB par rapport au niveau de 315Hz.	

3. Vérification de la commutation de la constante temps d'enregistrement.

- Faire passer la platine en mode de reproduction sans insérer de cassette.
- Vérifier que le niveau de bruit au niveau des bornes de sortie de ligne reproduction lorsque le commutateur de détection de chrome situé en baut de l'unité de transport de bande est enclenché/désenclenché.

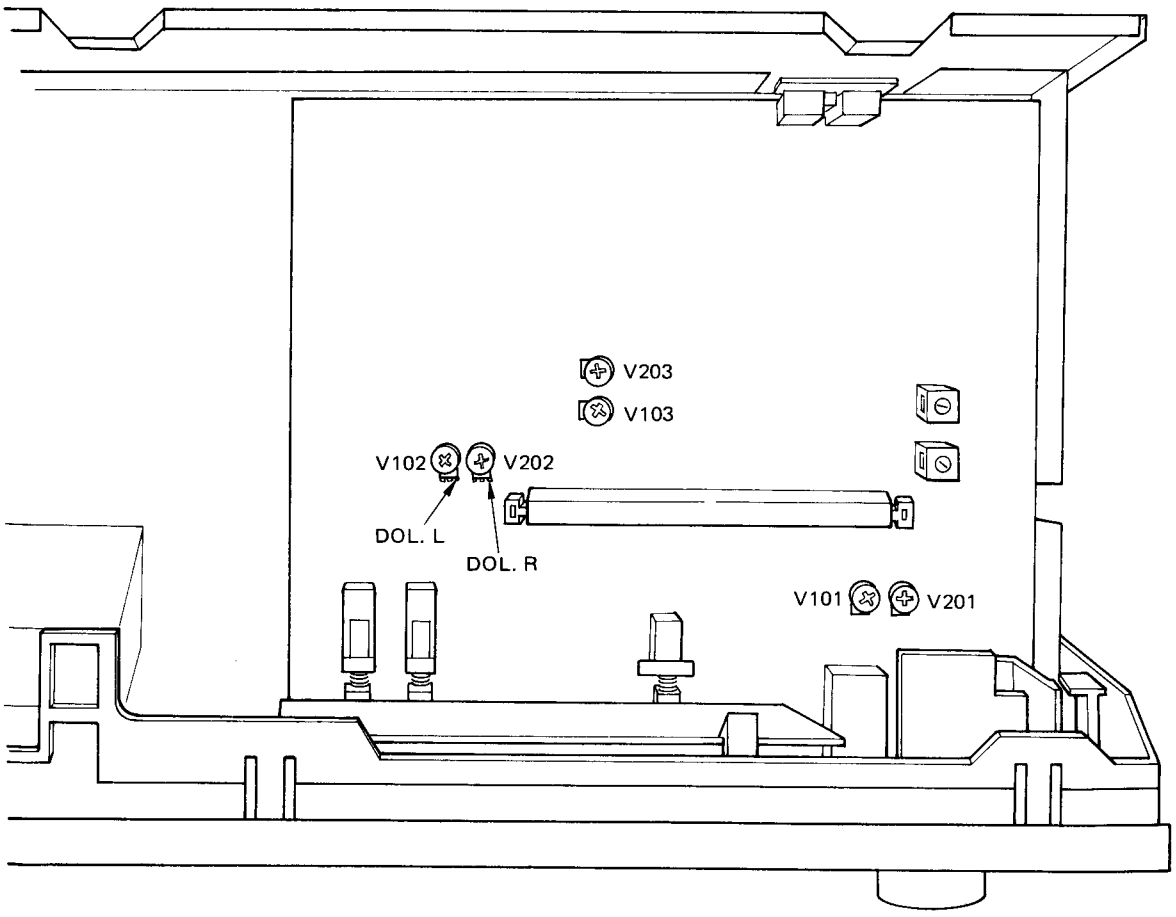


Fig. 10-7 Emplacements des dispositifs de réglage

4. Réglage du niveau de lecture

• Ce réglage servant à étalonner le niveau DOLBY NR doit être exécuté avec un grand soin.

	Mode	Signal appliqué et bande d'étalonnage	Emplacement du réglage	Emplacement de la borne de mesure	Valeur relevée	Observations
1	ARRÈT	Placer le sélecteur de bande (TAPE SELECTOR) en position "NORM".				
2	LECTURE	Lire le passage préenregistré de 315kHz/0dB de la bande d'étalonnage STD-331B.	V101 (canal gauche) V201 (canal droit)	TP.DOL L (canal gauche) TP.DOL R (canal droit)	−7,7dBv (412,1mV)	

5. Contrôle de fonctionnement des décibelmètres

	Mode	Signal appliqué et bande d'étalonnage	Emplacement du réglage	Emplacement de la borne de mesure	Valeur relevée	Observations
1	PAUSE À L'ENREGISTREMENT	Injecteur un signal de 315Hz/−10dBv (316mV) per les bornes d'entrée de ligne "LINE INPUT".	Potentiomètre de réglage de niveau d'enregistrement "REC LEVEL".	TP.DOL L (canal gauche) TP.DOL R (canal droit)	Vérifier si les décibelmètres "0dB" s'alument sous un niveau de sortie de signal de −7,7dBv±1,8dB.	

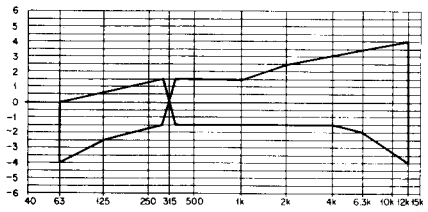
6. Calage de réponse en fréquence d'enregistrement et de lecture

	Mode	Signal appliqué et bande d'étalonnage	Emplacement du réglage	Emplacement de la borne de mesure	Valeur relevée	Observations
1	ARRÈT	Placer le sélecteur de bande (TAPE SELECTOR) en position "NORM".				
2	PAUSE À L'ENREGISTREMENT	Injecter un signal de 315Hz/−30dBv (31,6mV) per les bornes d'entrée de ligne "LINE INPUT".	Potentiomètre de réglage de niveau d'enregistrement "REC LEVEL".	TP.DOL L (canal gauche) TP.DOL R (canal droit)	−27,7dBv (41,2mV)	
3	ENREGISTREMENT/LECTURE	Enregistrer le niveau de signal indiqué plus haut sur la bande d'étalonnage STD-608A à 315Hz et 6,3kHz et lire ce passage.	V103 (canal gauche) V203 (canal droit)	Bornes de sortie droite et gauche "OUTPUT"	Le niveau de reproduction de 6,3kHz est de 0dB par rapport au niveau de 315Hz (lire les signaux enregistrés sur STD-608A).	
4		Changer la bande d'essai, le sélecteur de bande et les positions du commutateur de réduction de bruit DOLBY, et vérifier que la fréquence en réponse est satisfaisante (voir la fig. 10-8). Si la réponse en fréquence n'est pas dans la plage spécifiée, re-régler V103 et V203 de façon à ce que le niveau de reproduction de 6,3kHz se situe entre +1 et −0,5dB par rapport au niveau de 315Hz.				

7. Réglage du niveau d'enregistrement

	Mode	Signal appliqué et bande d'étalonnage	Emplacement du réglage	Emplacement de la borne de mesure	Valeur relevée	Observations
1	ARRÈT	Placer le sélecteur de bande (TAPE SELECTOR) en position "NORM".				
2	PAUSE À L'ENREGISTREMENT	Injecter un signal de 315Hz/−10dBv (316mV) par les bornes d'entrée de ligne "LINE INPUT".	Potentiomètre de réglage de niveau d'enregistrement "REC LEVEL".	TP.DOL L (canal gauche) TP.DOL R (canal droit)	−7,7dBv (412,1mV)	
3		Régler le commutateur DOLBY NR en position ON.				
4	ENREGISTREMENT/LECTURE	Enregistrer le niveau de signal indique plus haut sur la bande d'étalonnage STD-608A et lire ce passage.	V102 (canal gauche) V202 (canal droit)	TP.DOL L (canal gauche) TP.DOL R (canal droit)	−7,7dBv (412,1mV)	
5		Placer le sélecteur de bande (TAPE SELECTOR) en position "CrO_2".				
6		Enregistrer le niveau de signal indiqué plus haut sur la bande d'étalonnage STD-603 et lire ce passage.	Contrôler	TP.DOL L (canal gauche) TP.DOL R (canal droit)	−7,7dBv±1,5dB	
7		Placer le sélecteur de bande (TAPE SELECTOR) en position "METAL".				
8		Enregistrer le niveau de signal indiqué plus haut sur la bande d'étalonnage STD-610 et lire ce passage.	Contrôler	TP.DOL L (canal gauche) TP.DOL R (canal droit)	−7,7dBv±1,5dB	

Bande d'étalonnage	STD-608A
Sélecteur de bande	NORM
Commutateur DOLBY NR	OFF



Bande d'étalonnage	STD-608A
Sélecteur de bande	NORM
Commutateur DOLBY NR	ON

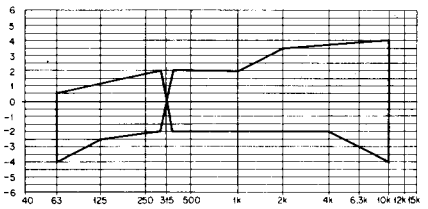
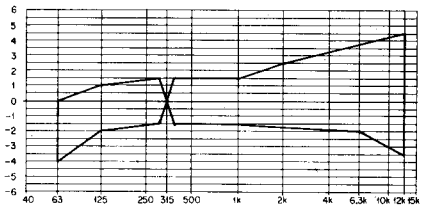


Fig. 10-8-1 Zone de réponse en fréquence admissible de lecture et d'enregistrement (NORM)

Bande d'étalonnage	STD-603
Sélecteur de bande	CrO_2
Commutateur DOLBY NR	OFF



Bande d'étalonnage	STD-603
Sélecteur de bande	CrO_2
Commutateur DOLBY NR	ON

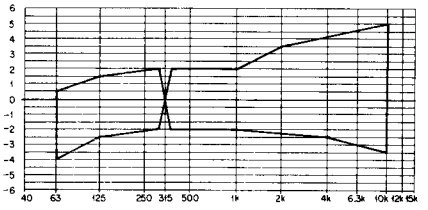
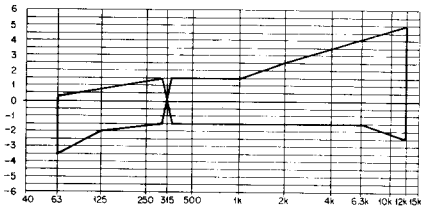


Fig. 10-8-2 Zone de réponse en fréquence admissible de lecture et d'enregistrement (CrO_2)

Bande d'étalonnage	STD-610
Sélecteur de bande	METAL
Commutateur DOLBY NR	OFF



Bande d'étalonnage	STD-610
Sélecteur de bande	METAL
Commutateur DOLBY NR	ON

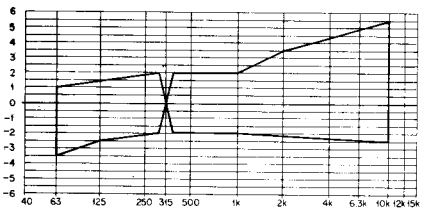


Fig. 10-8-3 Zone de réponse en fréquence admissible de lecture et d'enregistrement (METAL)

10. AJUSTES

10.1 AJUSTES MECANICOS

Antes del ajuste

Limpiar ambas bases de los carretes, el eje de arrastre y el rodillo de presión con algodón remojado en alcohol.

Ajuste de la prasción del rodillo de presión

1. Establecer el magnetófono en el modo de reproducción.
2. Con el calibrador de tensión, presionar ligeramente contra el brazo del rodillo de presión y separar un poco dicho rodillo del eje de arrastre.
3. Luego reponer el rodillo de presión sobre el eje de arrastre, y leer el valor en el momento que el rodillo de presión empieza a girar. Si la indicación no está dentro de 300—500g, reemplazar el muelle del rodillo de presión.

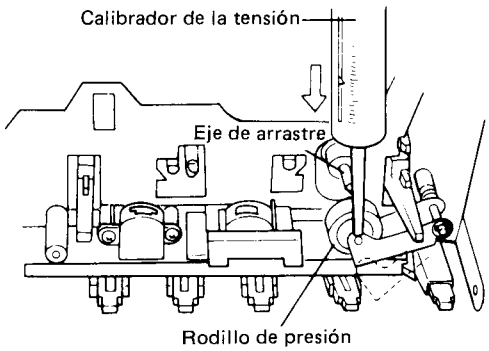


Fig. 10-1 Ajuste de la presión del rodillo de presión

Ajuste de la torsión de la base del carrete

Utilizar el medidor de torsión para medir la torsión durante las funciones de reproducción, avance rápido (FF) y rebobinado (REW). Los valores obtenidos deben estar normalmente dentro de los límites permisibles enumerados en la tabla 1.

Si los valores obtenidos no están dentro de tales límites, reemplazar el conjunto de la base del carrete tensor (TU) y/o el conjunto de la base del carrete de suministro, la rueda de guía TU, o todo el conjunto del brazo de arrastre.

Tabla 1

	Base del carrete TU	Base del carrete de suministro
Modo de reproducción	38 – 57g.cm	*1,5 – 5g.cm
Modo de avance rápido	75 – 135g.cm	*1,5 – 5g.cm
Modo de rebobinado	1,5 – 5g.cm	75 – 135g.cm

**Indica par de torsión de contratensión.*

Ajuste de la velocidad de la cinta

1. Conectar el frecuentímetro al terminal DOL.L del conjunto del magnetófono.
2. Reproducir la parte de 3kHz de la cinta de prueba STD-301. Al principio, la frecuencia deberá estar entre 3000Hz~3010Hz, y podrá ajustarse girando el resistor semifijo ubicado en el orificio de ajuste del motor, como se muestra en la Fig. 10-2.

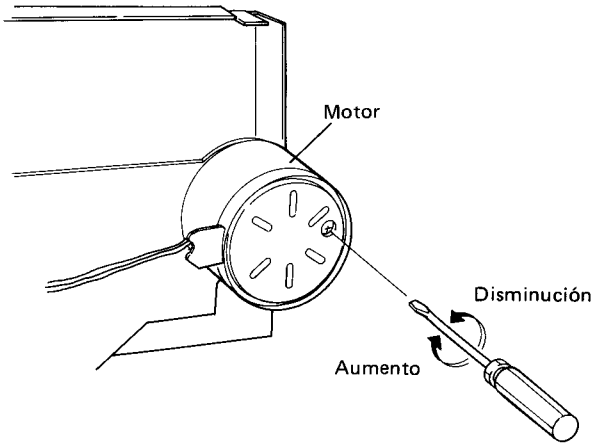


Fig. 10-2 Ajuste de la velocidad de la cinta

Comprobación y ajuste de la unión de grabación (REC)

Si, al poner el mecanismo de transporte en el modo de grabación, el conmutador deslizante no se conmuta completamente, mover la posición de engrane del mecanismo de unión REC.

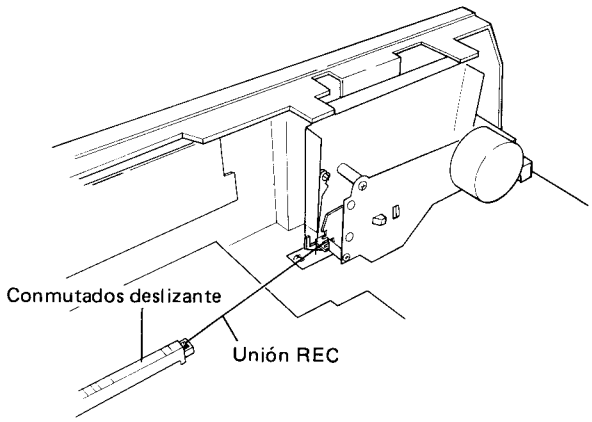


Fig. 10-3 Comprobación y ajuste de la unión de gravación

10.2 AJUSTES ELECTRICOS

Condiciones de ajuste

1. Los ajustes mecánicos deben terminarse primero.
2. Limpiar y desimanar la cabeza de grabación.
3. Dejar que el magnetófono se precaliente por unos minutos antes de iniciar los ajustes eléctricos.
4. La señal de referencia es de 0dB=1Vrms.
5. Conectar una resistancia de carga de 50 kilo-ohmios (o entre 47 y 52 kilo-ohmios) a los terminales de salida (OUTPUT).
6. A menos que se especifique de otra manera, los siguientes interruptores deben estar en las posiciones indicadas:
   DOLBY NR : OFF
   SELECTOR DE CINTA : NORM

Cintas de prueba

STD-331B : Para ajustes de reproducción (Referirse a la Fig. 10-4)
STD-608A : Cinta NORMAL en blanco.
STD-603 : Cinta CrO_2 en blanco.
STD-610 : Cinta de METAL en blanco.

Lista de ajustes y comprobaciones

1. Ajuste azimutal de la cabeza de grabación
2. Comprobación del ecualizador de reproducción
3. Comprobación de conmutación constante del tiempo de grabación.
4. Ajuste del nivel de reproducción
5. Comprobación del indicador de nivel
6. Ajuste de la respucsta de frecuencia de grabación y reproducción
7. Ajuste del nivel de grabación

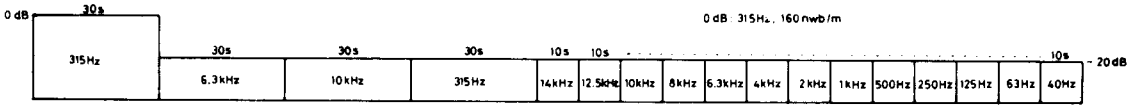


Fig. 10-4 Contenido de la cinta de prueba STD-331B

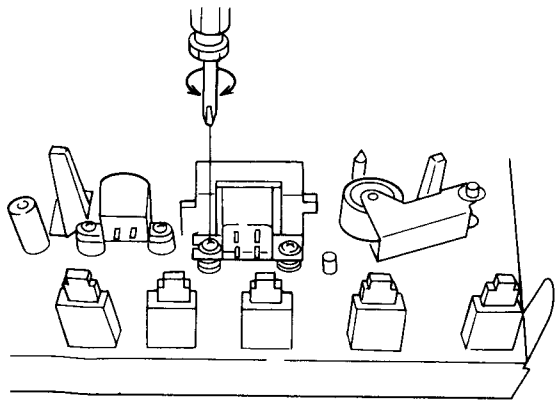


Fig. 10-5 Ajuste azimutal de la cabeza de grabación

Cinta de prueba	STD-331B
Selector de cinta	NORM
Interruptor DOLBY NR	OFF

• Debido al "efecto de borde", compensar -1dB el canal derecho a 63Hz.

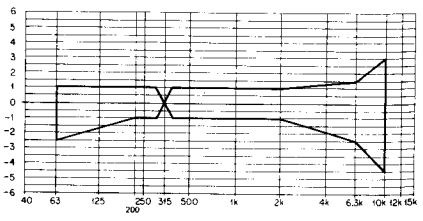


Fig. 10-6 Zona de respuesta de frecuencia de reproducción permisible

- Poner el interruptor DOLBY NR en la posición OFF.

1. Ajuste azimutal de la cabeza de grabación.

- Girar V101 y V201 a la posición máxima (completamente a la derecha)

	Modo	Señal de entrada y cinta de prueba	Punto de ajuste	Punto de medición	Valor de ajuste	Observaciones
1	Parada (STOP)	Regular el interruptor selector de cinta (TAPE SELECTOR) a la posición NORM.				
2	Reproducción (PLAY)	Reproducir la parte de 10kHz/–20dB de la cinta de prueba STD-331B.	Tornillo de ajuste azimutal de la cabeza de reproducción. (Referirse a la Fig. 10.5).	Terminales de salida (OUTPUT) derecho e izquierdo.	Nivel máximo de la señal de reproducción.	
3	Parada (STOP)	Dejar trabado el tornillo después de terminar el ajuste.				

2. Comprobación del ecualizador de reproducción.

	Modo	Señal de entrada y cinta de prueba	Punto de ajuste	Punto de medición	Valor de ajuste	Observaciones
1	Parada (STOP)	Regular el interruptor selector de cinta (TAPE SELECTOR) a la posición NORM.				
2	Reproducción (PLAY)	Reproducir las partes de 315Hz/–20dB y 6,3kHz/ –20dB de la cinta de prueba STD-331B.	Confirmación	Terminales de salida (OUTPUT) derecho e izquierdo.	El nivel de reproducción de 6,3kHz es de –0,5±2dB con relación al nivel de 315Hz.	

3. Comprobación de conmutación constante del tiempo de grabación.

- Poner el magnetófono en el modo de reproducción sin casete cargado.

- Comprobar que cambie el nivel de ruido en los terminales de salida de línea al abrir y cerrar el interruptor detector de cintas de cromo situado en la parte superior de la unidad de transporte.

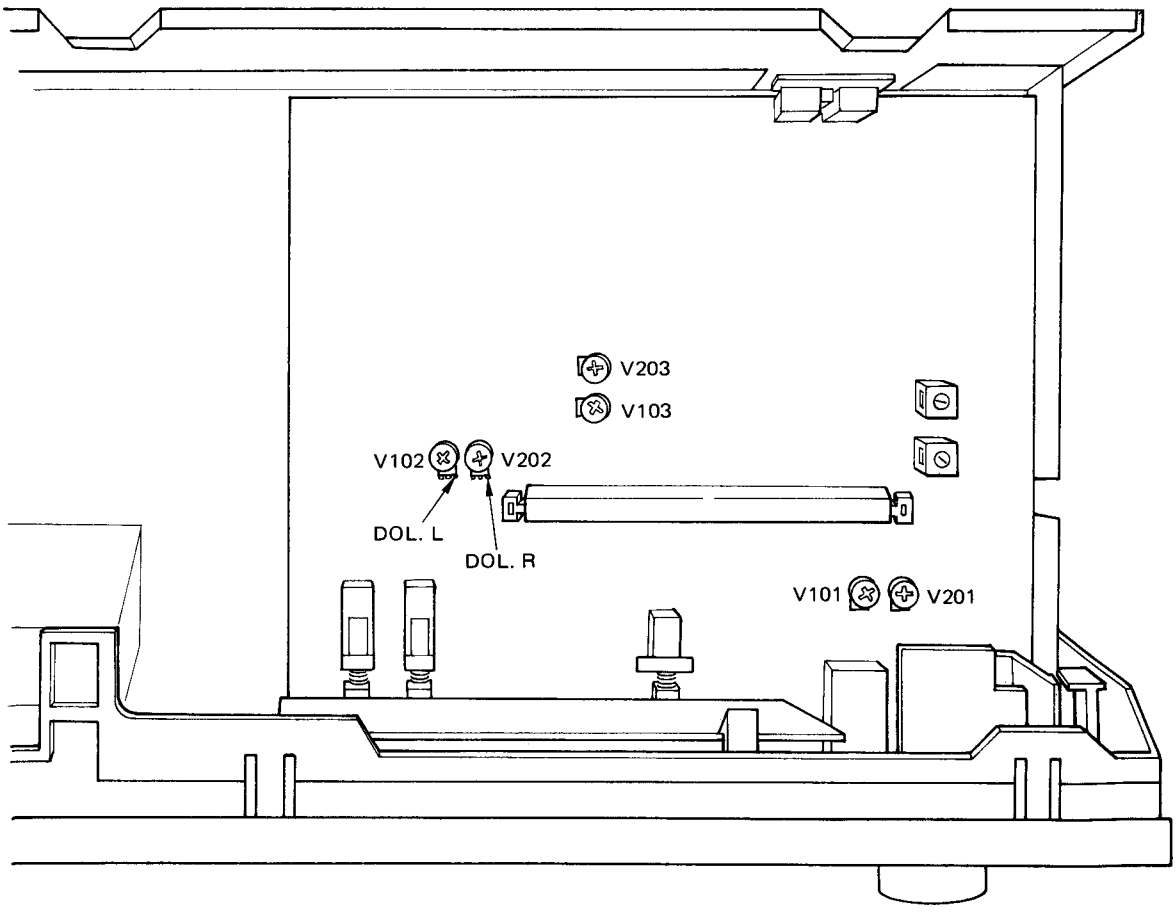


Fig. 10-7 Puntos de ajuste

4. Ajuste del nivel de reproducción

• Este ajuste determina el nivel DOLBY NR, y debe efectuarse con sumo cuidado.

	Modo	Señal de entrada y cinta de prueba	Punto de ajuste	Punto de medición	Valor de ajuste	Observaciones
1	Parada (STOP)	Regular el interruptor selector de cinta (TAPE SELECTOR) a la posición NORM.				
2	Reproducción (PLAY)	Reproduce la parte de 315 Hz/0dB de la cinta de prueba STD-331B.	V101 (canal izq.) V201 (canal der.)	TP.DOL L (canal izq.) TP.DOL R (canal der.)	−7,7dBv (412,1mV)	

5. Comprobación del indicador de nivel

	Modo	Señal de entrada y cinta de prueba	Punto de ajuste	Punto de medición	Valor de ajuste	Observaciones
1	Grabación/ pausa (REC/ PAUSE)	Aplicar una señal de 315Hz −10dBv (316mV) a los terminales de entrada de línea (LINE INPUT).	Control del nivel de grabación. (REC LEVEL)	TP.DOL L (canal izq.) TP.DOL R (canal der.)	Comprobar que los indicadores de nivel "0dB" se encienden dentro de −7,7dBv±1,8dB del nivel de señal de salida.	

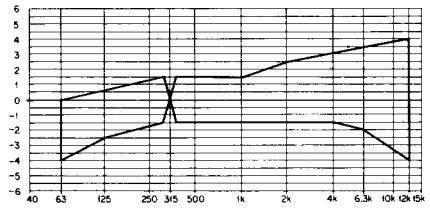
6. Ajuste de la respuesta de frecuencia de grabación y reproducción.

	Modo	Señal de entrada y cinta de prueba	Punto de ajuste	Punto de medición	Valor de ajuste	Observaciones
1	Parada (STOP)	Regular el interruptor selector de cinta (TAPE SELECTOR) a la posición NORM.				
2	Grabación/ pausa (REC/ PAUSE)	Aplicar una señal de 315Hz/ −30dBv (31,6mV) a los terminales de entrada de línes (LINE INPUT).	Control de nivel de grabación (REC LEVEL)	TP.DOL L (canal izq.) TP.DOL R (canal der.)	−27,7dBv (412mV)	
3	Grabación/ reproducción (REC/ PLAY)	Grabar el nivel de señal en la cinta de prueba STD-608A a 315Hz y 6,3kHz, y reproducir.	V103 (canal izq.) V203 (canal der.)	Terminales de salida (OUTPUT) derecho e izquierdo.	El nivel de reproducción de 6,3kHz es de 0dB en comparación con el nivel de 315Hz. (Reproducir las señales grabadas en el STD-608A.)	
4		Cambiar la cinta de prueba, y las posiciones del interruptor selector de cinta y el interruptor DOLBY NR, y comprobar si la respuesta en frecuencia es satisfactoria. (Referirse a la Fig. 10-8.) Si la respuesta no está dentro de la gama especificada, reajustar V103 y V203 hasta que el nivel sea +1 — −0,5dB en comparación con el nivel de 315Hz del paso 3.				

7. Ajuste del nivel de grabación

	Modo	Señal de entrada y cinta de prueba	Punto de ajuste	Punto de medición	Valor de ajuste	Observaciones
1	Parada (STOP)	Regular el interruptor selector de cinta (TAPE SELECTOR) a la posición NORM.				
2	Grabación/ pause (REC/ PAUSE)	Aplicar una señal de 315Hz/ −10dBv (316mV) a los terminales de entrada de línea (LINE INPUT).	Control de nivel de grabación (REC LEVEL).	TP.DOL L (canal izq.) TP.DOL R (canal der.)	−7,7dBv (412,1mV)	
3		Regular el interruptor DOLBY NR a la posición ON.				
4	Grabación/ reproducción (REC/ PLAY)	Grabar el nivel de señal en la cinta de prueba STD-608A, y reproducir.	V102 (canal izq.) V202 (canal der.)	TP.DOL L (canal izq.) TP.DOL R (canal der.)	−7,7dBv (412,1mV)	
5		Regular el interruptor selector de cinta (TAPE SELECTOR) a la posición CrO_2.				
6		Grabar la señal en la cinta de prueba STD-603, y reproducir.	Confirmación	TP.DOL L (canal izq.) TP.DOL R (canal der.)	−7,7dBv±1,5dB	
7		Reguler el interruptor selector de cinta (TAPE SELECTOR) a la posición METAL.				
8		Grabar la señal en la cinta de prueba STD-610, y reproducir.	Confirmación	TP.DOL L (canal izq.) TP.DOL R (canal der.)	−7,7dBv±1,5dB	

Cinta de prueba	STD-608A
Selector de cinta	NORM
Interruptor DOLBY NR	OFF



Cinta de prueba	STD-608A
Selector de cinta	NORM
Interruptor DOLBY NR	ON

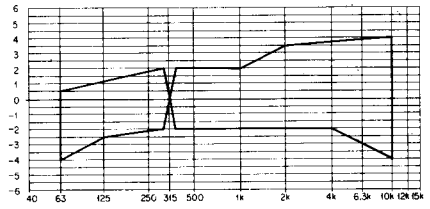
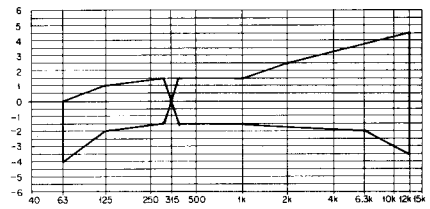


Fig. 10-8-1 Zona de respuesta de frecuencia de grabación y reproducción permisible (NORM)

Cinta de prueba	STD-603
Selector de cinta	CrO_2
Interruptor DOLBY NR	OFF



Cinta de prueba	STD-603
Selector de cinta	CrO_2
Interruptor DOLBY NR	ON

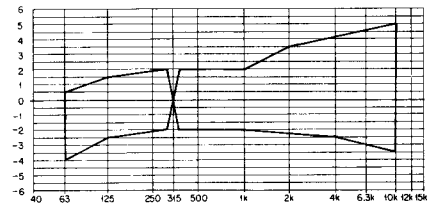
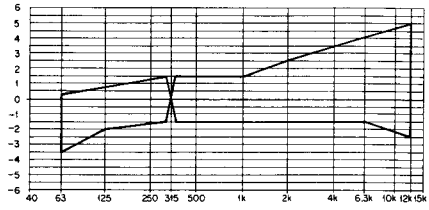


Fig. 10-8-2 Zona de respuesta de frecuencia de grabación y reproducción permisible (CrO_2)

Cinta de prueba	STD-610
Selector de cinta	METAL
Interruptor DOLBY NR	OFF



Cinta de prueba	STD-610
Selector de cinta	METAL
Interruptor DOLBY NR	ON

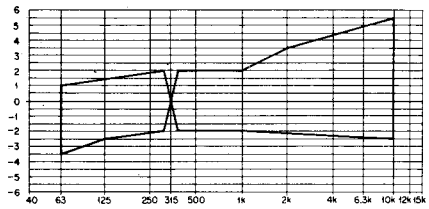


Fig. 10-8-3 Zona de respuesta de frecuencia de grabación y reproducción permisible (METAL)

11. SUPPLEMENT FOR HEM, HB AND D TYPES

CT-660/HEM, HB and D types are the same as the CT-660/KU type with the exception of following sections:

Mark	Symbol & Description	Part No.			
		KU type	HEM type	HB type	D type
⚠ ★	T1 Power transformer (120V)	RTT-437	(*1)	(*1)	(*1)
⚠ ★★	FU1 Fuse (T500mA)	.....	REK-049	REK-097	.....
⚠ ★★	S1 Line voltage selector	.....	.....	.....	RSX-057
⚠	AC power cord	RDG-048	RDG-053	RDG-052	RDG-058
⚠	Strain relief (for AC power cord)	REC-395	REC-396	REC-396	REC-395
	Power switch unit	Non supply	.....	.....	.....
	Power supply unit (*1)	.....	Non supply	Non supply	Non supply
	Packing case (for black model)	RHG-814	RHG-816	RHG-816	RHG-816
	Packing case (for silver model)	RHG-817	RHG-818	RHG-818	RHG-818
	Operating instructions (English)	RRB-255	.....	RRB-255	RRB-255
	(English/German/French/Italian)	.....	RRE-079	.....	.....

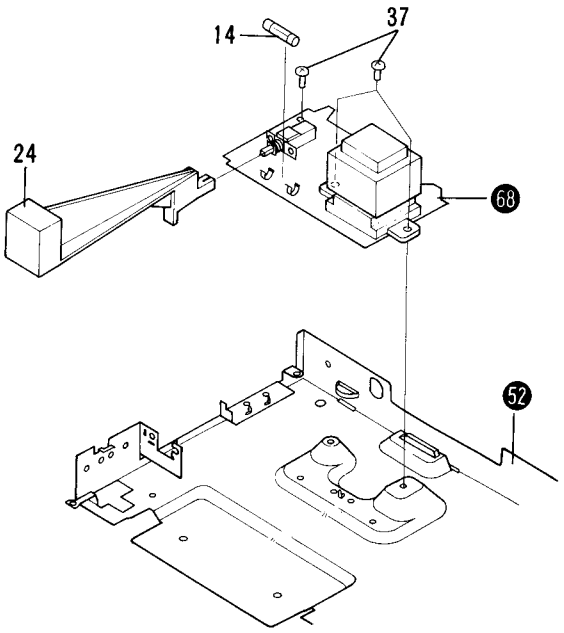
(*1) The power supply unit incorporates the power transformer.

The exterior components of CT-660 [BK]/D differ from CT-660 [BK]/KU in following sections:

Key No.	Description	Part No.		Remarks
		CT-660 [BK]/KU	CT-660 [BK]/D	
18	Display panel	RAH-637	RAH-650	
20	Door panel	RAH-665	RAH-667	

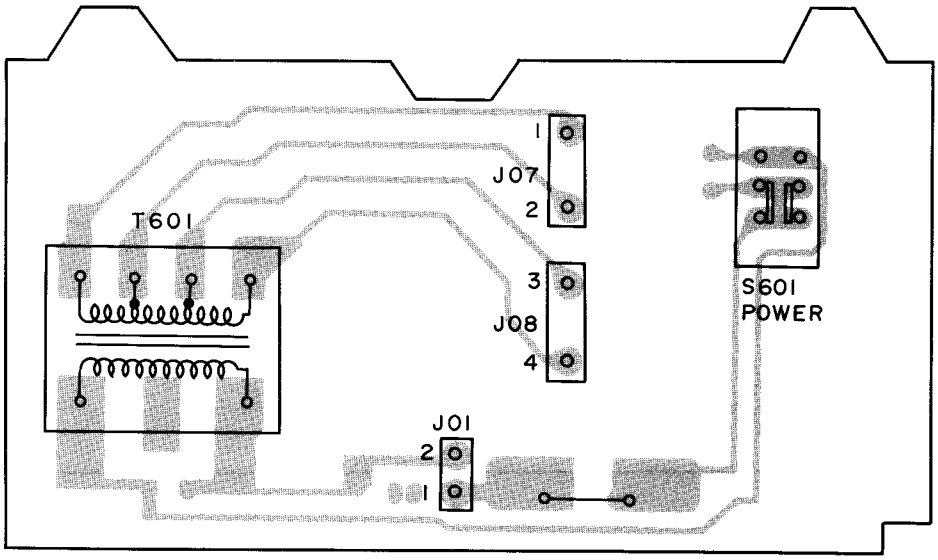
Exploded View for HEM, HB and D Types

Mark	No.	Part No.	Description
⚠★★	14	REK-097 (for HB)	Fuse (FU1, T500mA,
		REK-049 (for HEM)	withuot D-type)
	24	RAC-575	Knob (POWER)
	37	BBZ30P100FZK	Screw 3 x 8
	52		Chassis
	68		Power supply unit

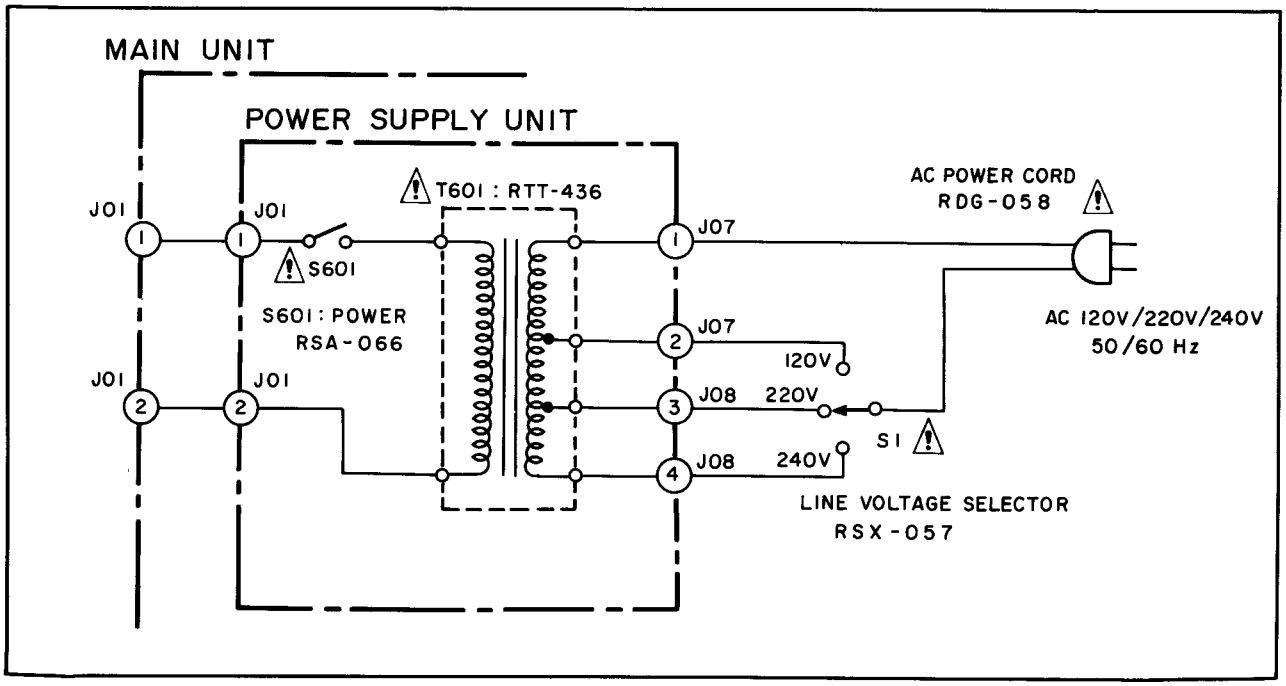


Power Supply Unit for D Type

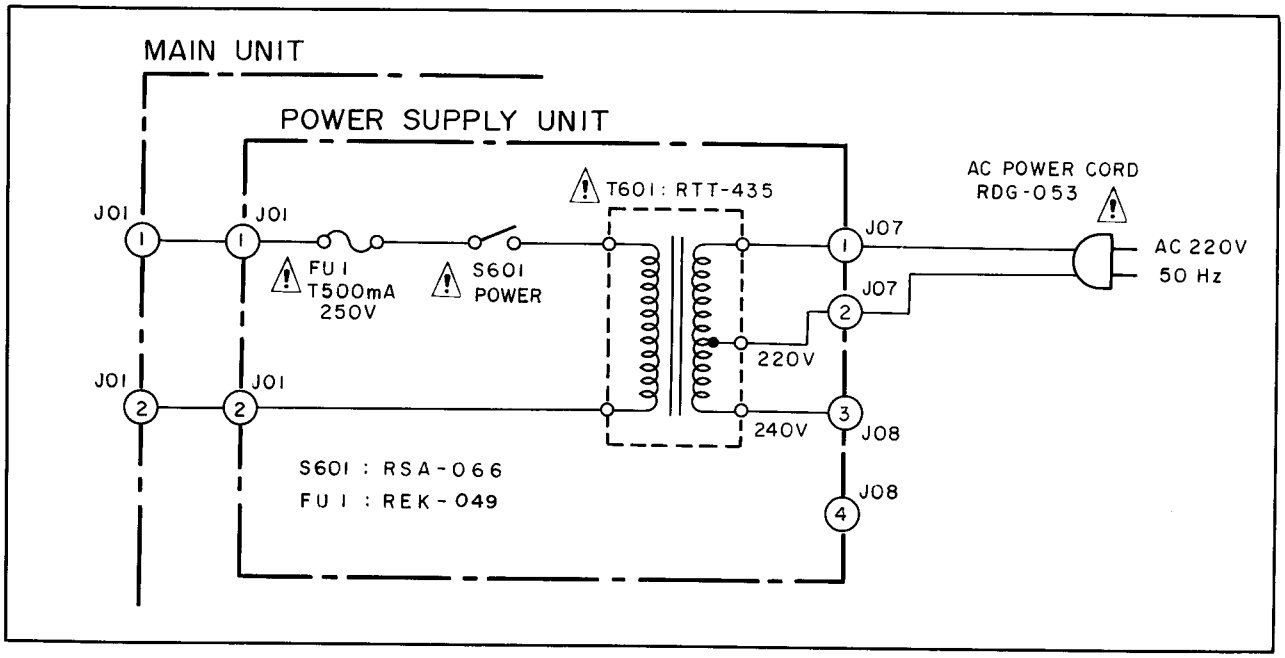
Mark	Symbol & Description	Part No.
⚠ ★ T601	Power transformer (120/220/240V)	RTT-436
⚠ ★★ S601	Push switch (POWER)	RSA-066



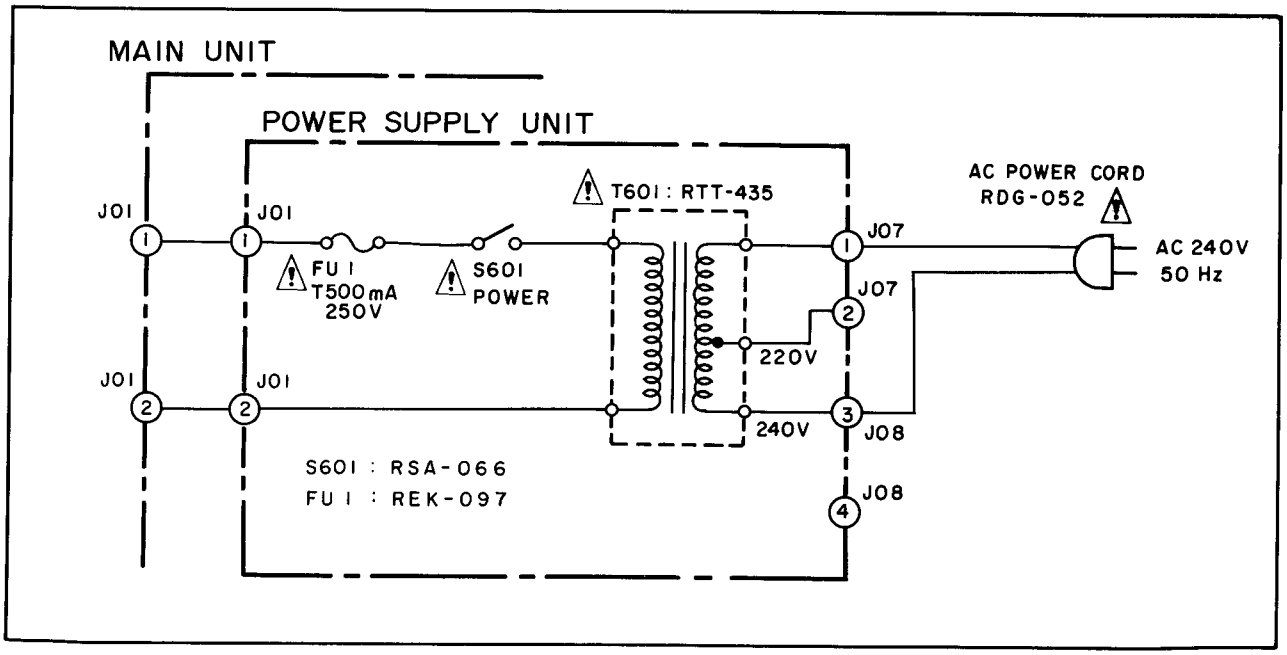
Power Supply Unit for D Type



Power Supply Circuit for HEM Type

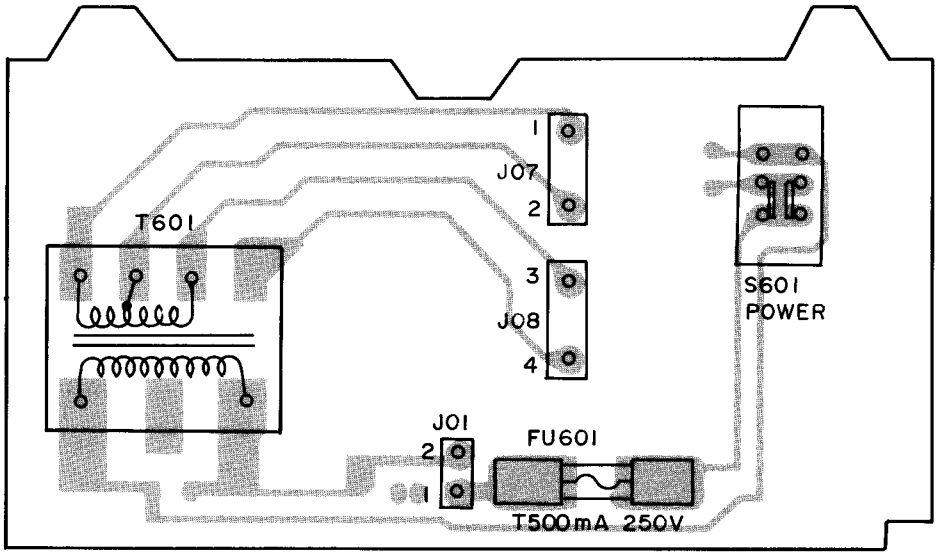


Power Supply Circuit for HB Type



Power Supply Unit for HEM and HB Types

Mark	Symbol & Descripton	Part No.
⚠ ★ T601	Power transformer (220/240V)	RTT-435
⚠★★ S601	Push switch (POWER)	RSA-066



Line Voltage Selection for HEM and HB Types

1. Disconnect the AC power cord.
2. Remove the bonnet case.
3. Change the connection of the AC power cord brown lead wire as follows:
   - 220V: Connect the brown lead wire to the J07-2 terminal on the power supply unit.
   - 240V: Connect the brown lead wire to the J08-3 terminal on the power supply.
4. Stick the line voltage label on the rear panel.

Description	Part No.
220V label	AAX-193
240V label	AAX-192